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ABSTRACT

This document consists of four issues of a newsletter focused on the spectrum of technology use in literacy instruction. The first issue contains the following articles: "Five 'Big' Systems and One 'Little' Option" (Weisberg); "Computer Use Patterns at Blackfeet Community College" (Hill); "Software Review: Educational Activities' Science Series" (Lavier); "Recycle Computers for Literacy"; "Literacy in Mississippi (Lipscomb); "Audio Tape Recorders and Adult Literacy Training" (Jagger); "Jump Start" (Gueble); and "Library-Based Literacy Programs" (Eiselstein). The following articles appear in the second issue: "'World GeoGraph': Good Enough to Criticize" (Grady); "HyperText Possibilities" (Gueble); "An Engineer Discusses Factory Automation" (interview); "SUCCESS II": Computers Brought to Hard-to-Reach Learners" (Fish); "Cutting the Costs of Illiteracy in Deep East Texas" (Payette); "Out of Danger" (student story); and "Computer Curriculum Corporation Up-Date" (Taylor, Dickson). The third issue contains these articles: "Playing on Your Own at Playing to Win, Inc." (Gueble); "LEAP-Frogging One-on-One in Richmond" (Gueble); "Technology Futures" (Turner); "First Impressions: Two Software Programs for ESL Students" (Lane); and "Technology Transfer" (Egner, Gueble). The fourth issue includes: "You Are What You Speak" (Turner); "Word Processing and Writing" (Laidley); "Thinking the Unthinkable: Protection from Computer Viruses" (Pier); "Confessions of a Software Designer" (Statan); "Local Link-Ups: Is Networking in Your Future?" (Fleischman); "Laserdiscs: Beginning and Beyond" (MacDonald); "Evaluation of 'Keystrokes to Literacy'" (Brown, Askov); and "Research, Practice and Business Join over Workplace Literacy" (Laidley). A "Newsbriefs" section is included in all issues. (KC)

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ADULT LITERACY AND TECHNOLOGY NEWSLETTER

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Adult Literacy &
Technology Newsletter

Vol. 3 No. 1, May, 1989

Five "Big" Systems and One "Little" Option

— Alan Weisberg

This paper is intended to advise practitioners and policy-makers about crucial considerations in the purchase and design of computer-assisted instruction systems to improve disadvantaged adults' basic skills. Five of the "big" computer-managed systems highlighting common elements and differences are analyzed here, as well as a brief discussion of an alternative, locally developed microcomputer-based system.

Developments in turnkey, or ready-to-use, computer-assisted instruction systems (CAI) show a trend toward more flexible hardware installations, and courseware developed specifically for adult learners. In pursuing these trends, the systems' manufacturers are reacting sensibly to the advent of microcomputers in education and to the nation's changing perceptions of its educational needs.

THE "BIG" SYSTEMS

The five turnkey systems considered here are: the Computer Curriculum Corporation's System (CCC), Control Data's Local PLATO Delivery System, U.S. Basics' Comprehensive Competencies Program (CCP), WICAT, and IBM's Principles of the Alphabet Learning Systems (PALS).

Control Data's Local PLATO Delivery System is the latest PLATO product, following nearly 25 years of development and revision. The new system is geared toward disadvantaged adult users. Units on job search and life skills have been added to this new version, augmenting preexisting sections on basic education skills. This colorized PLATO system operates on DOS microcomputers manufactured by Tandy, rather than on "dumb" terminals downlinked from a mainframe. Separately purchased microcomputers may also be used. The file server allows the PLATO computer lab to hook up with Apple II micros.

CCC is, with PLATO, a senior entry in the CAI market. It was developed originally by Dr. Patrick Suppes of Stanford University, who has managed the company throughout its more than 20 years in existence. CCC was developed primarily for the K-12 market and is used extensively in hundreds of school districts across the nation. The system now offers a wide variety of curricula, including GED preparation. In addition to its primary base in schools it now serves growing numbers of adult users, many through Job Training Partnership Act (JTPA) programs. CCC runs on the Microhost minicomputer, which the company sells with Atari 1040 color "learning stations." As a result, the CCC system is less flexible. The learning stations can, however, be run as stand-alone micro computers with Atari software.

U.S. Basics' CCP is the most widely used system in the job training market. Robert Taggart developed CCP based on his experience as Director of Youth Programs for the Department of Labor

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NEWSBRIEFS

The ***Job Skills Education Program*** (JSEP) is now available for pilot testing on the PLATO and MicroTICCIT systems. JSEP includes more than 300 hours of instructional materials, which makes it the largest computer-based basic-skills program for adults. Originally developed for the U.S. Army, the program has been used by more than 1000 soldiers over 3 years. Covering more than 200 basic skills, all lessons are job-related, self-paced and individualized. All require upper primary-school English abilities. For information, contact Dr. Lois Wilson, Ford Aerospace Corporation, 12330 Pinecrest Road, Reston, VA 22091.

Gallaudet University's ***National Literacy Conference on the Needs of Deaf and Hard of Hearing Adults*** will be held June 22 – 24, in Washington, D.C. *Jump Start* author Forrest Chisman and "Mind Mapping" expert Nancy Margulies will keynote the proceedings.

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Five "Big" Systems *cont'd.*

in the latter part of the Carter Administration. CCP relies, to a greater degree than the other systems, on workbooks, texts and audio visual materials. These accompany the system and are tied to its extensive and frequent testing, and its placement of learners into instruction tiers.

WICAT has been on the market 8 years, primarily in the K-12 sector. Nonetheless, its General Education Degree (GED) software has recently been "getting lots of play," according to a WICAT representative. The manufacturer offers its own "super micro" and file server to network its "dumb" terminal labs, but WICAT now offers Apple II or IBM-compatible micro options. The company prides itself on going beyond drill-and-practice to focus on conceptual teaching and higher-order thinking skills.

PALS was released by IBM in 1988 after five years of development and field testing. Developer John Henry Martin based the system on the *Write to Read* model used widely in elementary schools. PALS focuses on early literacy skills, offering 100 hours of instruction that enables individuals with virtually no reading skills to advance to the third or fourth grade levels. PALS has very specific hardware requirements: in addition to using IBM PCs, it requires IBM's Infowindow, touch screen and video disk hardware.

The majority of education programs addressing the needs of disadvantaged adult learners use one of these five systems. Each represents an investment of millions of dollars and in some cases, decades of development. Practioners contacted for this article were generally pleased with their system: Virtually all users thought the quality of instruction in their program had improved.

SOFTWARE AND COURSEWARE

The WICAT system is strictly computer-based. PALS, CCC and PLATO provide various supplements to the computer curriculum. With the exception of PALS, which focuses on a very basic literacy objective, all of these systems offer hundreds of hours of potential computer-based instruction.

CCP's initial development stemmed from review, packaging and licensing of existing texts and software, as opposed to the creation of wholly new curricula designs used by the other systems. As a consequence, CCP offers on-line

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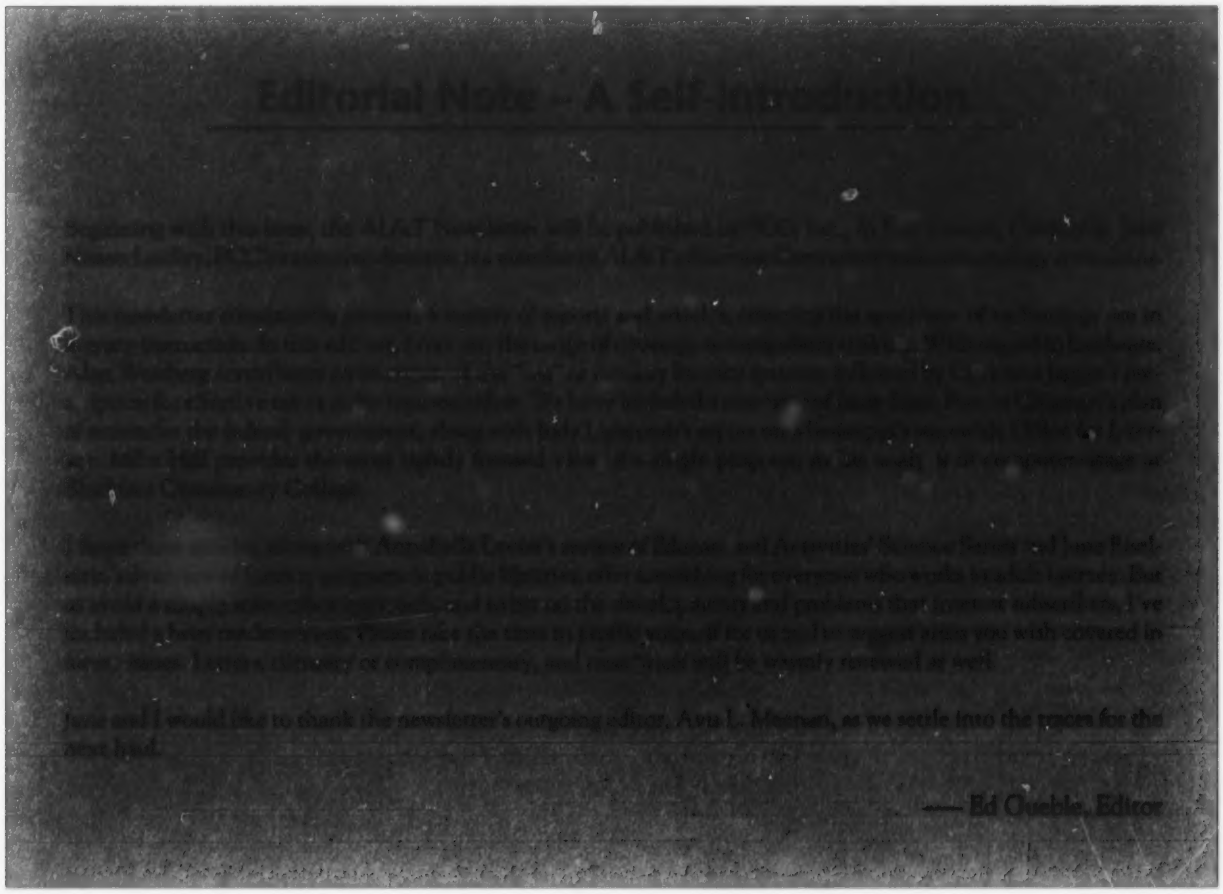

Newsbriefs *cont'd.*

AL&T's 3rd annual conference, July 20 - 22 in Louisville, Kentucky, will again bring literacy practitioners, researchers, and business, labor and government representatives together to discuss the uses and advocacy of technological solutions to adult education. Previous conferences draw 300 participants to Pennsylvania State University in 1987 and 600 to Pittsburgh in 1988. We hope you will join us this year. See page 11 for details.

CORRECTION

We regret that in the last newsletter the address for ZTEK, the interactive videodisc distributor, was omitted. The correct address and updated information is:

ZTEK
PO Box 1968
Lexington, KY 40593
1-800/247-1603

Videodisc software and hardware – CD-ROM – HyperCard Stacks – all aimed at education

Computer Use Patterns at Blackfeet Community College

— Mike Hill

The Native American Community Colleges have felt the effect of the computer revolution, despite economic, geographic and cultural barriers to 'progress.' Most of these roughly 25 schools started in the middle 1970s, when the Tribally Controlled Community College Act was passed, providing for direct federal subsidy in partial fulfillment of government treaty obligations in return for use of Indian-controlled land assets. Generally, these are two-year schools serving between 100 and 600 Native American students per quarter and are chartered by local tribal governments retaining control through a board of regents.

BLACKFEET COMMUNITY COLLEGE

Blackfeet Community College (BCC), in Browning, Montana, offers 11 programs leading to the Associate of Arts degree: Native American Studies, Blackfeet Bilingual Studies, Building Trades, Business Management, Small Business Management, Office Education, Secretarial Administration, Human Services, Teacher Training, Early Childhood Education, Telecommunications and General Studies. There is also an Adult Basic Education Program with a General Educational Development (GED) testing component, and a Laubach Literacy International Program.

Women comprise about 65% of the student body, whose average age is 27 years. In contrast to other community colleges, approximately 95% of the students are of Native American descent, and almost all qualify as Pell Grant recipients for the economically disadvantaged. Almost half of the entering students need coursework in basic skills. Staffing at BCC consists of 20 full-time and 27 part-time faculty supported by an additional staff of 25.

In this type of institution questions arise such as: What software and hardware are used most frequently? What percentage of students use the computer center? Which courses and curricula lead students to technology and which do not?

COMPUTER ACQUISITIONS AT BCC

The first computer user at BCC was the Student Services Department in 1979. Basic filekeeping was the only function. In 1983, BCC secured a grant through Title III of the Higher Education Act of 1968, for the purchase of word and data processing hardware and software for most departments. One each Apple IIc, IIe, IBM and Compaq microcomputer was purchased for student use, allowing organization of an Introduction to Computer Science course.

In the autumn of 1988 BCC established a computer center, using two of the college's eleven classrooms. The original hardware was augmented with purchases through another Title III grant and a Minority Institutions Science Improvement Program grant. The computer center now contains 15 IBM PC-compatibles, 14 Apple IIc's and IIe's, and three other models.

In addition to standard applications, the center's software includes large numbers of Computer-Aided Instruction (CAI) programs in math, english, and reading. Other programs include business and accounting, agriculture, chemistry, biology, physics, career development, statistics and typing.

STUDENT USE

The 32 machines for BCC 's 330 students provide roughly one micro-

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Blackfeet Community College *cont'd.*

computer for every ten students. The student use pattern is tracked with the computer center's sign-in sheet and the records kept near each computer by logging classes students work on.

Of the 652 sign-ins at the center between September 28 and December 16, 1988, 90 (14%) were staff or faculty. A total of 70 students were responsible for the remaining 562 sign-ins. Mean use by these 70 students was roughly 8. However, as might be expected, the bulk use was concentrated in a few individuals.

Eight students and two faculty members, using the facility 15 or more times each, were responsible for 272 sign-ins in this fall quarter, or 40% of the total facility use. An additional 12 students and faculty signed in between 10 and 15 times, totalling 139 uses. Thus, 16 students and 6 faculty were responsible for 63% of the uses during this period. Use of the facility by community members totalled 2%.

Software use and course relationships were similarly concentrated. The computer science curriculum accounted for 26% of all uses. The next most frequently used software group was language-related, with 15% of total use devoted to word processing or computer-aided instruction in reading and English. Secretarial Sciences accounted for 15% of total uses. Journalism classes and projects entailed 10% of the facility's use. In all, 66% of usage fell into the above four categories. Other curricula, receiving 2% or less usage, were: social sciences, math, business, education and natural sciences.

IMPLICATIONS

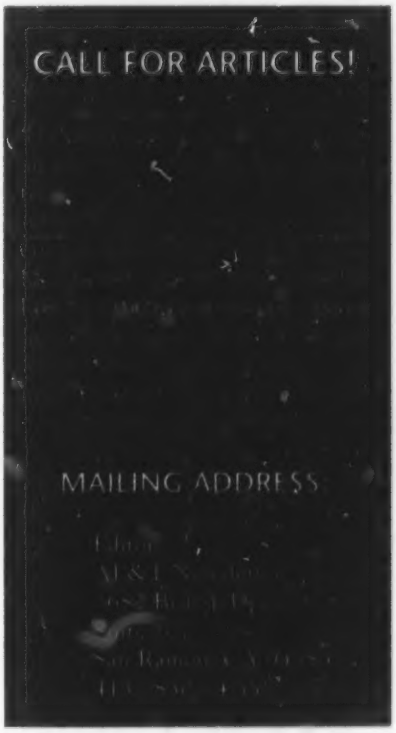
The existence of the BCC Computer Center and its frequent use must be seen as only a beginning. Clearly, computer use among the 250 BCC non-users should be promoted. This dovetails with a need for integration of the computer center facilities into a greater number and wider variety of courses. BCC offered 149 classes in fall 1988. Of these, only 34, or 22%, required computer use.

Several initiatives may be easily undertaken by colleges in situations similar to BCC's:

- The faculty curriculum committee can urge teachers to include requirements for computer use in syllabi
- A Computer Technology Committee can be formed to promote use
- Faculty search-committees can include familiarity with computers as a hiring qualification
- Portions of software and hardware budgets can be made available to specific departments
- Student Services division can provide tuition-waiver incentives or awards to students proficient in computer use
- Leave time, travel expenses and tuition reimbursement can be offered to faculty upgrading their computer skills.

Although not every class will benefit substantially from integration of computer-use, through these measures the majority of BCC's students can be more fully exposed to the available technology.

Mike Hill is director of the Adult Education Department at Blackfeet Community College.



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Five "Big" Systems *cont'd.*

computer instruction augmented by a great range of reading materials, workbooks and audio-visual supplements. A teacher in one CCP lab serving JTPA enrollees estimated that less than a third of the student's time was spent with the computers. The balance was devoted to a combination of her own and CCP-provided traditional materials.

STUDENT MANAGEMENT

All these systems integrate testing and feedback into instruction, and all except PALS are promoted partially on the basis of this integration. This feature aids the development of individualized instruction and is essential when large numbers of client-users are involved. These management systems also enable labs with several funding sources to track user hours for reimbursement purposes.

An experienced adult education math teacher uses CCP, but has found some of the materials provided to be too juvenile, and in the case of the math program, inferior to her own designs. Nonetheless, she applauds the management system: "For years I have been moving towards individualizing instruction. CCP finally provided me a way of doing so without mind-boggling manual recordkeeping."

STAFFING REQUIREMENTS

Adult-education computer labs based on any of these systems can be staffed by a single instructor and are often run by a teacher aide rather than a credentialed teacher. However, most programs with these systems offer parallel curricula presented conventionaly by a teacher. Optimally, programs will also incorporate paid or volunteer tutors.

Programs that generate support through Average Daily Attendance, especially those based in adult education or community college settings, benefit financially from the many hours of instruction the computers offer and document. Because hardware and user fees cost less over time than instructional personnel, computer education labs may become money-makers.

These apparent staffing and delivery advantages, however, can and do lead to "warehousing" — the processing of massive numbers of students without that all-important attention from a caring teacher. U.S. Basics, in fact, initially marketed CCP's cost-effectiveness based on the ability to reduce staff. The allure of this potential, with its destructive pull toward rote learning, is especially acute when disadvantaged adult learners are involved. All of these systems are best implemented as integral parts of more diversified, carefully constructed educational "delivery systems." For this reason, consideration must be given to a lab designed around preexisting or preferred curricula.

"Programs that generate support through Average Daily Attendance, especially those based in adult education or community college settings, benefit financially from the many hours of instruction the computers offer and document."

COST AND TECHNICAL SUPPORT

Costs are, of course, a function of the number of stations needed, the hardware chosen, the availability of color, and the curriculum purchased. According to Control Data a cost comparison done by an impartial party concluded that there are no major cost differences among the various systems.

Volume discounts are available, however. Lauri Strumpf, an advisor to JTPA remediation programs, urges each of the roughly 500 JTPA Service Delivery Areas nationwide, to select a standard system to achieve cost savings and more consistent, useable data.

The price for a system of 20 learning stations ranges from $50,000 to $100,000. Initial cost for one low-end fifteen-station lab is roughly $40,000. Potential cost of one lab with all options is $125,000. Annual costs of licensing, upgrades, revisions, and training range from $2,000 to $20,000. While these figures are high, heavy use can result in low per-hour instruction costs, which is how many users justify their investment.

Although some vendors argue otherwise, both practitioners and corporate representatives suggest cost can be a secondary consideration when choosing a system.

CLASSROOM PERFORMANCE

Manufacturers offer extensive evidence that system users' scores increase on standardized tests in math and language arts. U.S. Basics' Taggart's, CCP development has created both the largest database and the largest apparent investment in evaluation. Taggart reported in a paper for the William T. Grant Foundation that CCP instruction raised learners' test scores an average of 3.7 grade levels per 100 hours instruction. (Sticht, 1987) Other systems report similar and even greater gains, but the evaluation studies available from vendors raise too many methodological issues to merit comparison here.

In a response to Taggart's report, commissioned by the Grant Founda-

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Five "Big" Systems *cont'd.*

tion, Thomas Sticht suggests that test score improvements reflect a "warm-up" effect — the quick recovery of earlier instruction — stemming from the testing of out-of-school youths and adults. Sticht points out that in the CCP group showing the 3.7 grade rise in test scores, nearly half experienced less than 25 hours of total instruction. He also questions whether test scores in the 8th or 9th grade level (the average level achieved by students leaving the program) can be considered a functional skill degree in the contemporary workplace and in society. (Sticht, 1987)

> "Compiling lists of advertising logos and product names, fiction and poetry projects, sentence completion based on current events — these ideas and others can help vary instruction and build interest in the connection between basic skills and experience."

Building Your Own System

Some fundamental questions to consider: can standardized achievement tests measure the skills and qualities which both learners and employers seek? Do inadequate basic skills only complicate the inability of disadvantaged adult learners to apply those skills to problems in society and the workplace? Is drill-and-practice, the stock-in-trade of the "big" systems, the most effective way to use computers to improve basic skills and employment opportunities?

CCP, for example, includes no applications software in its package, and so fails to take advantage of one of the computer lab's richest educational resources — the computer itself. And yet it's simple to envision wordprocessing exercises that draw on adult learners' experiences at work, at home and at large. Compiling lists of advertising logos and product names, fiction and poetry projects, sentence completion based on current events— these ideas and others can help vary instruction and build interest in the connection between basic skills and experience. Of course, in employment development programs, the acquisition of even rudimentary computer skills can't be overlooked.

Because the "big" systems discussed were developed to fit a variety of educational programs, they minimize the input and impact of the teacher, whereas independent design and acquisition allows computer-aided instruction to be integrated with preexisting conventional instruction. The techniques and curricula which teachers have developed and proven in their own classrooms can thereby be conserved and enhanced in the independently designed system.

Clearly, for staff with a minimal background in teaching or microcomputers, the investment of time and effort in acquiring and organizing hardware, software and courseware is prohibitive. However, programs drawing on a degree of educational and technical experience can reap cost savings *and* ultimately a more flexible system of computer-aided instruction that directly meets needs of the moment.

As an example, savings from the installation of IBM-compatible micros networked to a hard disk might be used to purchase a scanner. This would allow articles, advertisements and other texts to be entered directly into the system, increasing the potential for connection between the classroom and the learner's daily life. A laser printer, in addition to serving the other needs of an organization, can give students a real-world graphics capability and the sense that their words have the same effect and "feel" as the wealth of type and text that surrounds them.

Software acquisitions can begin with applications: wordprocessing, typing tutors, spell checkers, and a thesaurus, paint and draw programs. Another approach: purchase integrated software such as AppleWorks or Microsoft Works, combining several applications. Let learners become computer users, inserting disks, booting them up, saving work and printing it. In these ways, job training participants learn about the tools that empower people in the workplace.

Information on applications and drill-and-practice programs is available from a variety of sources. There are several university-based software reviews (not oriented specifically to adult education), and the Apple Computer Company publishes a guide to Apple-based ESL and adult literacy programs. Consultants may be contracted for any phase in the system's development, but competent and even expert technical advice can be had from volunteers in most communities. Sources include college and university faculty, user groups, graduate and undergraduate students and corporate computer professionals. (Information on the AL&T ***Guide to Recommended Literacy Software*** appears on the insert, and our technology consultants appear on page 11 —Editor.)

A locally designed system's greatest advantage is its flexibility to develop beyond drill-and-practice and even beyond the narrow idea of a computer lab. Its apparent disadvantage lies in the need for greater teacher commitment and involvement. Ironically, in both these regards, the "little" system is becoming the model for the develop-

Five "Big" Systems *cont'd.*

ment of its "big" cousins. Any program moving toward computerized instruction, however, must judge options and make decisions based on the ongoing assessment of its students needs, and the program's own resources to meet those needs.

Reference:
Sticht, Thomas. "Solving the Basic Skills Crisis: Comments on the Paper by Robert Taggart." William T. Grant Foundation Commission on Work, Family and Citizenship. March, 1987.

Mr. Weisberg, a consultant for Foothill Associates in Nevada City, California, researched this article as a paper for Manpower Demonstration Research Corporation in New York. Mr. Weisberg has assisted in the development of several youth employment programs. With his aid, the San Jose Conservation Corps now operates an education program based on a flexible system combining applications with drill-and-practice, run on 12 Macintosh SE and 2 Apple II microcomputers.

The Adult Literacy & Technology Project appreciates the gracious and consistent support of the Gannet Foundation.

Software Review: Educational Activities' Science Series

— Annabelle Lavier

It happens again and again. Your student finishes the pre-GED manual, takes the GED Official Practice Test and scores a 37, 3 points below passing. You encourage the student to complete the next manual and take the B form of the test. The student does so and scores a 38. Now what?

Educational Activities' set of science programs may be the answer pre-GED and GED instructors are seeking. Designed for 4th- through 8th-level readers, the series fits easily into the GED curricula of classrooms and self-paced learning centers. The series' three sets include: Earth Science ("Earth: The Inside Story," "Weather," and "The Earth Through Time and Space"); Physical Science ("Machines, Work, and Energy," "Heat and Light," "The Structure of Matter," and "Electricity and Magnetism"); Life Science ("The Trees of Life," "Cells and Tissues," "Green Plants," and "The Human Body"). Each disk has three specific objectives, includes management software and comes complete with student worksheets. In "Machines, Work and Energy," for example, one of the objectives addresses the inclined plane.

Even students who consider themselves science illiterates can master the information in the series: Explanations of objectives, such as the definition of a fulcrum or the units of force measurement, are presented in small interactive units. Students manipulate illustrations to achieve the definitions. Units progress sequentially, with each point built upon preceding ones.

One student, Fred, finished "Machines, Work and Energy," then created his own worksheet problems, where instructors and students calculated the amount of work needed to move various crates. He even computed the work needed to move the classroom's bookshelf across the room.

Fred developed a method of approaching problems. Fred's Practice GED score jumped ten points, and his employer phoned his instructors to thank them for the change in Fred's attitude. Not all students will experience jumps in their test scores, but the Educational Activities' Science Series offers enjoyment and stimulation in a variety of ways.

Annabelle Lavier is coordinator of the Adult Basic Skills Technology Project in Oregon.

RECYCLE COMPUTERS FOR LITERACY

They sit in closets and storerooms around the country—Apple Plus Computers, TRS 80s, Commodores and others of their antiquated ilk. They seem slow now, with shrunken memories. Many of them, however, could do good service still, housed in adult literacy or community centers, assigned to literacy volunteers, or loaned to adults with literacy needs.

What is to be done? The answer begins with creating a national Recycle Computers for Literacy Clearinghouse to address the issues necessary to promote the free flow of first generation technology. These include: identifying and locating suitable microcomputers, advocating and creating incentives for donations to the clearinghouse, securing authorization for the copying of out-of-date software, and establishing an archival software and documentation library for systems "getting a second wind."

Those interested in an *ad hoc* special task force to establish this program can contact:

Jim Roberson, Manager
Tandy Business Computer Center
Salem, Oregon
FAX No: 503 / 588- 7135

Or

Dr. Bob Clausen, Director
Office of Community College Services
700 Pringle Parkway, SE
Salem, OR 97310

Report: Adult Literacy in Mississippi

— Judy Lipscomb

The newly formed Mississippi Office for Literacy is aimed at adding "progress" and "technology" to the images evoked by the state. With the strong support of Mississippi's first lady, Julie Mabus, the Office for Literacy coordinates activities addressing adult functional illiteracy.

Headed by Karl Haigler, former director of the Adult Literacy Initiative in the U.S. Department of Education, the Office for Literacy identifies public resources that can be channelled into literacy instruction, coordinates the implementation of public and private resources, and assists programs promoting the innovative technological applications for adult literacy instruction.

Under the Office for Literacy, the Mississippi Literacy Coalition has been working for almost a year to assess the performance of the methodologies and programs currently in operation, interviewing program providers and adult learners. The key issue to be determined is: what can the adult learner do on the job, in the family, and as a citizen, that he or she could not do before the instruction?

The Mississippi Literacy Foundation works to encourage private sector participation in, and support for, projects around the state.

One project currently in development includes a computer-aided instruction program designed specifically to address literacy in the family. The project's developers, a community-based adult literacy program, plan to begin enrolling mothers and their pre-school children in September, 1989. The project will be housed and staffed by the local school district.

Two other projects will address the work-oriented needs of adults facing unemployment, changes in on-the-job skills, or the lack of qualifications for promotion. In the first project, the Office for Literacy has organized a model partnership between a major electronics firm, a community college and the National Alliance of Business, assisted by funds from the Job Training Partnership Act. The goal is to transfer the U.S. Army's computer-based Job Skills Education Program (see ***Newsbriefs***, page 1) to the community's civilian population.

The second project, a mobile literacy workplace and technology lab, will initially serve an area that is both rural and industrial. The lab will be installed in a tractor-trailer frame donated by the Frito-Lay Corporation in Jackson. This model lab will serve be replicated in all ten of the state's planning development districts.

With its people as its greatest resource, and technology as a tool, the Office for Literacy is working to ensure that from the myriad of images the state of Mississippi brings to mind, progress will be among the first to leap out.

Judy Lipscomb is the special assistant for literacy and technology in the governor's Office for Literacy, in Jackson, Mississippi.

Audio Tape Recorders and Adult Literacy Training

— Christina Jagger

Audio tape recorders aren't part of the *new* technology, but they aren't intimidating, cumbersome or costly, either. And they can be a valuable tool for teachers and tutors working with adults on literary skills.

READING

Students who listen to a recording of a selection first, then read it on their own, know what to expect in terms of new words and content. Teachers can help focus students' listening by asking them to pay particular attention to one aspect of the selection. Students can, for example, visualize a short story. When preparing tapes, teachers can stop reading at appropriate points and ask students to predict what will happen next. Visualization and prediction are two important strategies that often don't come easily to poor readers.

Students can also benefit from listening to tapes while they are reading themselves. As they listen, they hear a fluent reader group words appropriately and read unhaltingly. When they come to a word they don't recognize in print, they hear it decoded for them.

Read-along tapes may be purchased from publishing houses, or easily recorded in-house. Choose short selections, read slowly and group only a few words together when preparing tapes for very poor readers. On tapes for better readers, longer selections can be read with more natural word

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Tape Recorders *cont'd.*

grouping and speed. Students should listen to the tape several times, read the selection silently with the tape, then read the selection aloud.

Students often enjoy taping material after they have practiced reading it. If they have young children at home to read to, they can do a 'trial-run' for the tape recorder. In this way they can find out how fluent and animated they sound and how clearly they pronounce words, before risking their work in front of tiny critics.

Of course it's fun for students to listen to tapes of material they are not expected to read. All kinds of tapes are available inexpensively at bookstores, including literature, old radio shows and self-help advice. Encourage students to listen to a variety of tapes. The returns—new ideas, a better sense of how written language sounds, enjoyment—can be enormous.

WRITING

Many adult learners view themselves as poor writers. They know their handwriting is labored, and they misspell words and mispunctuate sentences. Thus, they may be amazed to hear how good their writing sounds when read aloud, and begin to realize they can convey a message in writing despite the need to hone their writing mechanics.

Students may be able to evaluate writing more acutely when listening instead of reading. Ask them what they like about a paper—perhaps the content, or particular wording—and to listen for rough parts, digressions, lack of clarity and unwieldy sentences.

If students read aloud poorly, teachers may choose to tape their writing themselves. Such readings may require a bit of rehearsal, if the handwriting is hard to read or there are many mechanical errors. The effort, however, often uncovers a paper's strong message or vivid pictures. Papers read on tape also allow students to avoid potentially embarassing reviews in front of other students: With the paper on tape, they can listen with earphones. Conversely, students who are proud of their work can listen to it several times and even share the taped reading with other students, friends and family.

One of the most accessible pieces of technology, the audio tape recorder, is a surprisingly powerful tool for helping students become adept at all aspects of communication.

Christina Jagger is a technology consultant for the AL&T Project, and a senior editor at New Readers Press, the publishing division of Laubach Literacy International.

Report: Jump Start

— Ed Gueble

The final report on the Project on Adult Literacy, sponsored by the Southport Institute for Policy Analysis, was released in January, 1989. Written by Forrest P. Chisman, *Jump Start* recommends measures for the federal government to take to improve the nation's literacy rate.

Chisman proposes a "new outlook toward adult literacy," based on the understanding that "there is no single ideal service delivery system for literacy—the national effort is and must be pluralistic." School reform, literacy volunteers, professional teachers, efforts on the parts of business, labor and the public sector, and the development of technology all must be brought into play.

The literacy problem must be divided into two sectors: one for those individuals with limited basic skills, and one for the three to four million Americans with limited English proficiency. Because this second group comprises our fastest growing population group, Chisman warns that "unless we invest more to address the language problems of immigrants and of Hispanic-Americans, the nation is headed toward a major economic and social crisis."

Jump Start addresses the literacy and basic-skills needs of the American workforce as well: Although this group has "the greatest near-term economic importance, paradoxically most public and private programs are not available to people who are on the job." We must, according to Chisman, push for systems that produce substantial gains in basic skills, rather than remaining satisfied with registering nominal gains in test scores.

Chisman maintains that his extensive recommendations are "neither very expensive nor very difficult," when contrasted with other large scale social problems. He says major advances could be attained with as little as a $550 million increase in spending.

Identifying leadership as the key element, Chisman recommends President Bush establish adult and workforce literacy as a major priority of his administration, with federal efforts coordinated by a new Cabinet Council on Adult Literacy.

Chisman proposes a "Basic Skills Act of 1989," that would establish a National Center for Adult Literacy, charged with conducting research, providing technical assistance to literacy practitioners and keeping policymakers abreast of the field. Through matching grants to state and local governments, the act would promote innovation in training and technology.

cont'd. next page

Jump Start *cont'd.*

On the state level, the Basic Skills Act would provide anyone with an eight percent set-aside fund to promote literacy innovation, with the stipulation that governors tapping the fund must also develop an effective literacy plan that increases access to literacy delivery systems.

Four existing federal acts—the Job Training Partnership Act, the Carl D. Perkins Vocational Education Act, the Adult Education Act, and the Family Support Act—would receive additional funds for delivering basic-skills training to recipients of vocational training and to people already in the workforce.

Not surprisingly, *Jump Start* promotes the use of technology in adult and workforce literacy efforts. The report recommends skills improvement programs address the particular needs of the learners within their immediate social and geographic contexts. Technology must contribute to the achievement of this goal: In the same way different skills programs should be developed to approach different communities of learners, the hardware and software these programs use should be flexible enough, or designed specifically from its inception, to enhance the responsiveness of training to learners' needs.

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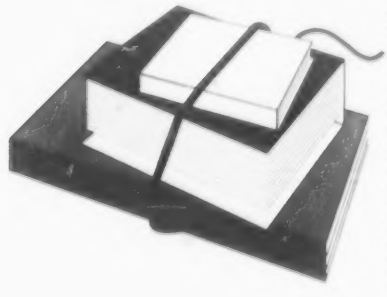

Report: Library-Based Literacy Programs

— June Eiselstein

Public libraries' participation in the national literacy effort generally falls into three distinct roles: furnishing literacy materials, providing instruction and offering literacy support services.

Traditionally, the library has been a source of materials on many subjects, literacy included. Developing technology, however, has made audio-visual and computer-related materials available for new adult learners, new speakers of English, tutors and instructors.

Computer databases are also used to compile and annotate literacy bibliographies, to identify local literacy collections for referral, and to offer research materials and demonstration collections for literacy providers.

The General Equivalency Degree (GED) needs of patrons are met in part by library video collections: GED preparation tapes may be seen in on-site viewing areas, or, in some cases, they may circulate, perhaps accompanied by library equipment.

Although work and organization are required to develop and maintain library staff's technical skills, libraries are generally comfortable with the role of provider of materials.

The same can rarely be said about librarians acting as actual literacy instruction providers. Libraries may act cooperatively with other literacy providers to recruit, train and place volunteer tutors and students, but they rarely are able to assume leadership in such projects. Library administrators should consider involving their libraries more fully in literacy instruction by promoting staff participation in non-library tutor training, Adult Basic Education (ABE) staff development, and the provision of library-based instruction at off-site locations.

On the state level libraries are beginning to involve themselves more effectively with literacy and related technology. The State Library of Kentucky staged rural one-day workshops that led to funding, through Title VI of the Library Services and Construction Act , of 11 literacy-and-technology programs based in local libraries. The Family Literacy Program of the California State Library is implementing an intergenerational approach to literacy, combining remediation with the early prevention of illiteracy.

Cooperating with other literacy providers, libraries often contribute support services, including the showcasing of publicity and the provision of space for tutoring and tutor-training. The Mary H. Weir Public Library in Weirton, West Virginia, goes so far as to maintain data on literacy providers, and to offer a central literacy phone number, referrals and referral follow-ups.

Of course, libraries have a vested interest in the maintenance of a reading public. However, library participation in literacy programs remains directly tied to funding, to the agreement of library directors and trustees on literacy services as a basic library function, and to communities' perceptions of their public libraries' roles.

June Eiselstein is a technology consultant to the AL&T Project, and works in the New Britain Public Library, New Britain, Connecticut.

TECHNOLOGY CONSULTANTS
ADULT LITERACY AND TECHNOLOGY PROJECT

The Technology Consultants in the Adult Literacy & Technology Project have been active for the last three years, providing assistance to hundreds of literacy practitioners on a wide range of questions such as how to begin using technology, how to select software and hardware and how to find software for special-need learners. Those who have requested information from the "TCs" have come from a diverse range of agencies, such as ABE, Laubach, LVA, universities, government, business, labor, community colleges and corrections.

The Consultants, chosen for their expertise in both literacy and technology, are "on-call" for free or low-cost consultation or presentation at conferences. Please keep this list for future reference.

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Jane Charmoli, Coordinator
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Curriculum Aids from the Adult Literacy and Technology Project

Guide to Recommended Literacy Software. This Guide lists more than 80 adult literacy software titles with cost, necessary hardware, subject and test-preparation goals. The listing is accompanied by a detailed program description, and evaluations of its strengths and weaknesses.

Cost: $13.50 members, $15.00 non-members

"Promoting Technology" Videotapes. Each videotape, (roughly 15 minutes running time) employs interviews, on-site footage and voice-over to illustrate the use of technology in adult literacy instruction. The accompanying print units include photos and graphics suitable for the creation of overhead transparencies. They address choosing appropriate software and hardware and detail the use of technology with adult learners.

Series includes: **Awareness; Hardware; Software; Applications**

Cost: *Separate videos — $30 each*
Series of four — $100

AL&T Newsletter Reader Survey
(for New and Continuing Subscribers)

Please complete this form to help us better serve your needs and interests. Your name and other information may be provided on the reverse side.

Type of agency:

1. Literacy Service Provider

a. ❑ ABE/ESL/GED
b. ❑ Library
c. ❑ Volunteer
d. ❑ Community-Based
e. ❑ Community College
f. ❑ Other

2. ❑ Business/Industry
3. ❑ Labor
4. ❑ Government
5. ❑ College/University

Hardware used in literacy work:

1. ❑ Microcomputer (please list types)

2. ❑ Mini- or Mainframe computer
3. ❑ Videotape
4. ❑ Audiotape
5. ❑ Microcomputer Scanner

Software used in literacy work (please specify):

1. ❑ Computer-Aided Instruction

2. ❑ Wordprocessing

3. ❑ Database

4. ❑ Hypermedia

5. ❑ Page Layout

6. ❑ Graphics/Drawing

Please identify articles in this issue that interested you:

Please suggest titles of topics for articles which you would like to see in future issues:

❑ I would like to contribute the following articles to the AL&T Newsletter:

Adult Literacy & Technology Newsletter
Vol. 3, No. 2 Summer 1989
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World GeoGraph: Good Enough to Criticize

by David Grady

(Editors note—The following review doesn't address software elements critical to adult literacy programs, such as the reading or math skills required. The program, however, is exciting, and is designed for use in education. And as Mr. Grady suggests, the development of this product and others like it will occur when users, including adult literacy providers, develop an activist relationship to manufacturers.)

As a California taxpayer, I removed the shrink-wrap from MECC's new *World GeoGraph* program (for the Apple IIgs) with keener than usual curiosity. I paid for this one, folks, or at least I partly paid for part of it. Tired of hearing that we wouldn't get good software until we had lots of hardware (and therefore a big market), and we wouldn't get lots of hardware until the software existed that made it worth owning, the California State Department of Education decided

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Hypertext Possibilities: Bringing the Computer to the Curriculum

by Ed Gueble

"I started dabbling maybe three years ago with the Mac, because we had 28 Apple IIe's, and we got to a plateau where it was just dead. We got stuck in drill-and-practice." From that plateau, Southern California teacher Rich Miyagawa managed to climb to a perch with greater potential, atop 20 Macintosh computers utilizing hypertext software, voice- and image-digitizing equipment, low-level animation, and laser disk-based video. Miyagawa and his colleague, teacher Nancy Hogg, expect to introduce elements from across the entire mainstream curriculum into their labs for Limited English Proficiency (LEP) students.

"The computer is visual, and can reach everybody," says Miyagawa. Thirty percent of Blair High School's 1,300 students are identified LEP students, with the majority coming from Central America and Mexico, and other significant segments speaking Mandarin Chinese and Vietnamese. About 200 of these students are regulars at Blair High's Boot Lab, where they may receive instruction in English language skills, or English-as-a-Second-Language instruction in social science and other curriculum areas.

"Our newly arrived students don't lose content matter, relative to their peers, the way a lot of LEP students do," says Hogg, "because we can address any subject in their curriculum. And we can tailor the content of the class to the language level of the student. So a lot of our presentations are tailored to a fourth- or fifth-grade level of language ability, but the content is really sophisticated. It captures the student's interest."

"Our newly arrived students don't lose content matter, relative to their peers, the way a lot of LEP students do."

Hypertext programs, a critical tool in Hogg and Miyagawa's work, allow the user to create 'cards' that organize information through a changeable set of associations, such as themes or vocabulary words. This capability means that a given bit of information can be hooked to a set of other bits. Language as most of us write it works primarily on linear associations created by the order of words, as in a sentence. Miyagawa uses Hypertext to connect onscreen images to text, to related text and images, to recorded speaking of that text, and even to animation of a scene or character.

According to Miyagawa, the key to a successful program is the teacher, who selects and delivers the subject matter via the technology: "You don't need 20 Macs at a school site to use HyperCard effectively. It's essential that you have presentation equipment, such as Data-Show, which captures through overhead projection what happens on the Mac screen, so that the whole class sees it at one time."

In any case, it has taken the combined efforts of both of these specialists to develop the HyperCard-based LEP

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A small confession . . .

I don't know a great deal about literacy issues, and still less about technology—I use a microcomputer, primarily for text handling, and *of course* I'm literate. Most of my income, and more of my identity than I can parse out at the moment, is tied to my own literacy. But only now through my work on the newsletter is the nature of literacy as a privilege, or better, as a right I've taken for granted, coming clear.

I'm learning a lot, pretty quickly. Thoughts on drill-and-practice software, the JTPA, distance learning, and intergenerational literacy get tossed my way every day now; I field them and toss back my own thoughts, volleying words with my usual semblance of expertise. And it's funny, but it wasn't until yesterday that I realized I've never ever talked, knowingly, with an adult who can't read. I'm gaining 'hands-off' knowledge, and what's even funnier, it's OK, because for many of the people on my phone list adult literacy is a software market, or "a productivity problem exploding into the national view," or a lever for project funding.

In this issue, there's coverage of a Texas JTPA project that integrates across-the-board counseling to improve its students' life skills, and of an Indiana project in which volunteers bring portable computers to the homes of hard-to-reach people in need of remediation, and of Pasadena High School teacher Nancy Hogg, who works one-on-one with her LEP students on their own essays. These programs cost a lot of money; I was struck, at one point, by how few learners they served. But *I'm* learning, now, and I've tapped the thin vein of a different reality. I see the attention and compassion that's needed to serve just one adult illiterate. And humility—"Our tutors need to understand that they'll be learning too, with the students, and from the students, maybe more than the students will learn from them." There is not enough money going out to programs like these. Those of you who work and have worked 'hands-on' inside the mists of this software market, this productivity problem—you have my most profound respect. And my apologies, while I continue to learn.

■ ■ ■

Among my other minor sins, this issue of the newsletter is overstocked with Apple-related news: our interview on automation highlights a Mac II interface; the "Hypertext Possibilities" in two LEP writing workshops make for a very exciting article that, alas, features HyperCard; then there's David Grady's review of the Apple II-based *World GeoGraph* software. Fortunately, the Computer Curriculum Corporation's response to Allen Weisberg's "Five Big Systems" article in last May's issue never uses the A-word.

I've quoted Lisa Vance, above, on tutoring. We'll tell her story, from the Richmond, California, LEAP project, next fall. Apple-bashers and non-users: then's when your time will *come!* I hope next to carry stories on Local Area Networks, on Atari, Amiga, and other PC-compatibles with high graphics capabilities, and on the diminishing appeal of Apple's low-end hardware, particularly the Apple IIgs. Those of you with pertinent facts, opinions or experience, stop reading now and get on the phone. Or use the reader survey—the responses from last issue have already proven immensely helpful, as well as interesting. Take a moment and get yours into the mail.

Regards,
Ed Gueble, Editor

Newsbriefs

The Department of Education's "Basic Principles for Adult Education" have been released, and are available from the Office of Vocational and Adult Education. Write Martha Clement at "The Update," U.S. Dept. of Ed., 400 Maryland Ave. SW, Washington, D.C. 20202-7300, or phone 202-732-2959. Briefly, the principles are: 1) Basic skills should be mastered by all students; 2) Course content should be directly related to learner, labor market, and community needs; 3) Partnership efforts should be expanded and strengthened; 4) Programs must have a system that ensures accountability. These principles are accompanied by a few examples, further details, and checklists for action.

The National Center for Family Literacy would like to contact people able to identify current intergenerational family-literacy projects, in order to survey these and to establish a national clearinghouse for information dissemination. Write to Sharon Darling, President, National Center for Family Literacy, 1063 Starks Building, Louisville, KY 40202, or phone 502-584-1133.

The American Association for Adult and Continuing Education's 1989 Conference, October 1-7 in Atlantic City, New Jersey, will feature presentations by Bernie Gifford, Apple Computer vice president of education, and education activist Shirley Chisholm, a former U.S. Congresswoman. Barbara Bush has also been invited to speak.

The California State University at Northridge will hold its fifth annual Technology for Persons with Disabilities in Los Angeles, March 21-24, 1990. Scholarships are available for persons with disabilities and their parents. Contact Dr. Harry J. Murphy, 818-885-2578.

Mindscape Inc.'s new "lab pack" sales policy allows educators to buy the exact number of extra program disks needed for their courses. When buying one copy of a Mindscape educational product, additional disks are $15 each for 20 or less, $12.50 each for 21 or more. Phone 800-221-9884.

Educational Data Systems, Inc. has developed a Workplace Literacy Assurance process, which includes a task-related needs assessment, training development and delivery, and forecasts of future needs. Clients have included Domino's Pizza, Ford Motors, General Motors and the United Auto Workers. Contact Chris Olson or Laura Yanis at EDSI, 313-277-2742.

Interview:

An Engineer Discusses Factory Automation

Jeff Peabody, a mechanical engineer specializing in robotized manufacturing systems, is currently developing an industrial robot for an aerospace company. The robot interface is designed to facilitate training and use. Jane Nissen Laidley, a member of the AI&T Steering Committee, spoke with Peabody about the skills and training needed by robot operators, and the current and future contours of factory automation in America.

JNL: Your robot is more than an assembly-line device. How complex are the tasks it can perform?

JP: We're trying to decide what to call it. Right now, it's an automated machine for handling and forming surface-mount devices, such as printed circuit assemblies. The surface-mount devices need to be dipped in flux—a kind of superheated solder—then trimmed of the excess by being struck with a stamp. The machine needs to select the piece, pick it up, carry it to the flux, dip it, carry it to the stamp, turn it, place it, launch the stamp and carry the finished piece back to the appropriate area.

JNL: What hardware does this entail?

JP: An Adept I Robot arm. Adept is the manufacturer of the robotic part. Plus some forming equipment, a pneumatic attachment sensor (we pick the part up by running streams of air around it), a fluxor, which is a sort of hot-pot for liquid metal, a cleaner, the vision system, and then the Mac.

JNL: What kind of Mac?

JP: A simple Mac II with a color monitor, an eight-bit video card, and a 40-megabyte hard drive. They're nice machines, I love 'em

JNL: How does the Mac figure?

JP: In our configuration it's a user-friendly intelligent terminal, which means that it's easy to use. It translates the user's button clicks and keystrokes into something the robot understands,

". . . it replaces the manufacturer's standard ASCII terminal, which has been at the pinnacle of robot-interface technology to date."

so the user doesn't have to know anything about the robot to make the system work. What's important about it—I don't think anyone else has done this yet—is that it replaces the manufacturer's standard ASCII terminal, which has been at the pinnacle of robot-interface technology to date. The ASCII terminal just gives you a blank screen with a short list of options, you select one and hit return, and you enter whatever program you've selected.

JNL: How is your interface different?

JP: Well, the actions are the same, but the on-screen interface is I guess you'd say a flat menu-structure. You can see the process and all your options at one time. With the standard interface, which is hierarchical, you have to remember the process and the different menu-options. It can get to be confusing if you don't know where you are. You can't browse, as in a Macintosh interface. Our interface tries to present you with the right choice in a given situation, whereas with most interfaces, you aren't really presented with anything helpful.

JNL: But people are using the standard interface, surely. How well does it work?

JP: OK, fine really, if your expectations are low. Our company has many robots, which are usually run by operators, usually workers without a college education, and often with low English skills. Sometimes robots are run exclusively by engineers, but in any case the operators receive a large amount of training, months of training when the machine is first installed.

JNL: Who does the training?

JP: It's on-the-job. In the factory. Sometimes I do it, at first, but it takes years for operators on a new machine to figure out what the hell is going on, and by then they've gone on to a new job. Usually after a machine is installed for a while, one guy will shepherd it in the factory, become the operator-guru for that machine.

JNL: So the standard procedure does really work satisfactorily?

JP: It takes a long time to learn, and it's difficult to train new people, because the system doesn't give you any clues, and you need to remember a lot. Which isn't beyond the abilities of the operators, by any means, but they don't use the machine to its full extent. Most installed robots' capabilities can be expanded, they can adapt to do different jobs. But no one on the spot knows how to make the adaptation.

JNL: Your machine is easier to operate, you say?

JP: The same level of personnel work this system. The main difference is that they don't need as much training, and the machine will be easier to run so it will run better. And more people will be able to learn to run it without very much training. I expect to cut the training time in half all the way down the line. Plus, the operators will be able to make decisions, to enter the parameters of movement for the robot in order to flux different parts, at different angles and so on. They won't hit problems that they think are insurmountable so often. We're hoping to give them a lot more things they can do, so they'll be able to keep the machine running to its full extent without the tendency to panic.

JNL: Who panics?

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Interview

con't from page 3

JP: Everybody. Not just operators. Engineers, executives . . . everybody.

JNL: What problems do they hit now?

JP: Well, they always call to say the software's gone bad, it's too old. I say software ages like cheese, it won't go bad unless something contaminates it. Or the machine goes out of calibration. Currently, an engineer has to recalibrate it. The operators don't recognize the problem or realize they can recalibrate —but now the machine will ask them to recalibrate it, and lead them through it.

JNL: Do they encounter any safety problems, currently?

JP: Well, not in theory. But problems could arise: lead poisoning, burns—pretty major burns, chemicals in their eyes. It is possible. Doesn't happen often. They could mash their fingers in the stamp, make them into burger.

JNL: Is the robot more or less dangerous?

JP: Less, definitely less.

JNL: Currently the job isn't, what do you say, robotized. What skills do the workers need now?

JP: Mostly steady hands, they're mostly women. They don't need to speak English in particular.

JNL: Will these same women run the machine?

JP: Oh, yes. The number of operators will stay the same. It's not a volume process, it's a quality issue—there's less danger of damaging parts by machine, whereas by hand a lot of parts get ruined. The machine is very gentle. Right now, the job is done by one person, and it will take one person to run the machine.

JNL: What new skills will they need?

JP: Well, they will need to understand the process, as they do now, and then they'll need to gain competency with the Mac. They'll have to be able to read English, in this case the menu options and the messages. They'll need some math skills, mostly geometry—for instance, to set the parameters of movement for the robot, the angle at which the part is dipped. They could do that. Usually that's done by the computer programmer on an engineering level, but with the new interface it's nothing they couldn't do. I don't see why they wouldn't be able to.

JNL: How is the robot work divided, usually, between engineers and operators?

JP: We stratify the work: the operators understand how everything works and they run the machines, but typically an engineer sets up the program. They have to—the operators—have to know how to measure things with a micrometer, they have to measure the parts, and do a little adding. Mostly the operators run the robots, and engineers have to baby-sit.

JNL: How much might that cost, the babysitting?

JP: Oh, depends. Twenty thousand dollars a year seems about right.

JNL: The operators will need to be versed in critical thinking, besides the math and measuring?

JP: Ah yes, critical thinking. There's a lot of that, with the robot. Being able to analyze the source of a problem. When the machine buggers a part, being able to figure out why it buggered it.

"Most installed robots' capabilities can be expanded, they can adapt to do different jobs. But no one on the spot knows how to make the adaptation."

JNL: Solving problems.

JP: To some extent, yes, we expect them to learn simple problem-solving skills, through experience on the machine. We have a manual that goes into trouble-shooting in some detail, but usually they don't read it. I'm really the only one who reads it.

JNL: The manual goes unread?

JP: I get called in about once a month. When the machine first goes out there, I get called in once a day or so.

JNL: But how are the operators trained?

JP: We expect employees to train other employees.

JNL: Are they successful at it, the training?

JP: Well, the people who get trained to use this system have probably been working for the company for a number of years, maybe seven or 10, so they've survived in the same system. They're not entry-level, they've shown by this time that they really care about quality. A large part of the job, prior to installing the robot, is to recognize when the part is mangled. They're real good at that.

JNL: And in your experience, that talent will translate into the ability to run your machine?

JP: Our operators have a high level of computer literacy, generally. Even people who do stuff by hand need to track parts or projects by computer, doing barcode stuff.

JNL: And that proves satisfactory in terms of the robot?

JP: Well no, it's a long way from an ideal system. Which is why we've been working on the Mac interface. It's much easier to use than other options: it's self-explanatory, you point and go, you don't have to type in a command. It makes a complex process simple.

JNL: Do you see industry turning to this kind of interface in the future?

JP: I don't know. I hope so, for my sake. I personally think there's a need, for exactly the reasons you're mentioning. Or rather we need automation that engages the worker, that allows and encourages and uses her problem-solving skills by creating the necessary context

for them to be applied to production problems. I think there's a need, but it's hard to convince most upper-level managers. They're not very computer literate. They may know how to use computers, but they don't see the big picture. It's like they're a layer of unproductive silt over the rest of the company.

"We need automation that engages the worker, that allows and encourages and uses her problem-solving skills . . . I think there's a need, but it's hard to convince most upper-level managers."

JNL: Well, there's a lot of attention focused right now on how the American worker is undereducated and underproductive.

JP: Our interface is a prescription for productivity on a national level. That's a big claim, but in America we make our products and machines through very complex processes. If that's so, and you're going to have a lot of workers without high school educations, then you're going to have to make your interface meet your user, be user-friendly on that level.

JNL: How do other countries get around the problem?

JP: The Japanese have a very different automation philosophy. They streamline the product. That is, they design the product for automation, which means that the automation process itself is very simple. We design for humans to build things, so that to replace the human-centered process by automation is complex by default. A robot is really just a machine-tool for very specific tasks.

JNL: Some people talk about robots replacing service workers, serving french fries.

JP: This country built the first robot, but the hardest thing is to get off this Isaac Asimov stuff, with the robot as a servant in your home. Now, operating robots *could* potentially become an entry-level job.

JNL: What do you suggest be included in secondary, general equivalency or basic skills education in this country, to increase productivity?

JP: It's best to teach them computer literacy, which at an early level can lead to problem solving—although it'll be ridiculously easy to learn to use computers in 10 or 15 years. But teach them hands-on stuff, interacting with the computer, getting comfortable opening up files, maybe having to set up parameters within menu options. They could generate data sets by taking measurements, or by driving the robot around its task.

JNL: It sounds as though you have some very specific goals in mind.

JP: Well yes, perhaps a bit. I mean I think that learning language and math is important, too. Of course. I just think all of these skills are probably better learned in a context, when they're integrated in the solution of a specific problem.

JNL: Do you run into technophobia? You were saying that operators all have a degree of computer literacy.

JP: I constantly run into technophobia and techno-idiots. When we introduce something, we often get people who seem to regress, who suddenly on this machine aren't computer literate. We keep telling them not to worry, they can't hurt the machines. That's technophobia. Techno-idiots are the people at the top who don't understand how it all fits together. Their planning misconceptions are idiotic. *They* might not understand the *need* for a good user interface —they look at the bottom line, without experience, so when somebody comes to them with an idea, they can't really evaluate it. Well they can, they just do a very poor job.

JNL: But some workers are still technophobic?

JP: The workers, yes, in a way. Whenever you introduce a machine you get a little bit of resentment. They aren't sure how it's written from the point of view of their personal and job safety. And you get people who have been doing this job, who don't feel involved with the creation or ownership of the technology, so their mission is to make sure that it fails. You have to convince them that you care what they think, that it's a tool that's going to make their job easier, so they can look better and get better paid.

JNL: It is designed for their safety?

JP: We spend a lot of time on safety equipment, all the OSHA stuff, of course.

JNL: And for their job safety? It's not going to degrade the operators' work environment?

JP: Absolutely not, not this machine. It's designed to make the operators more important. Their training time will be reduced, they'll accept the machine more quickly with this interface, they'll like it a lot more, and that makes a big difference to me.

JNL: Why?

JP: I know it's a good machine. How it's perceived in the factory affects whether or not I get to do another one. But the bottom line is it's not going to take anybody's job.

JNL: It seems like there's a gap in the system. You've done what you can to simplify the operation of the machine, but there's still no real guarantee that the operators will have the necessary English or reading skills to manage the interface.

JP: Well it's true. Factory training won't address a problem like that. It would be a lot of work, but we could change the on-screen language or add a foreign-language voice playback—the operator could click the word and hear it spoken. But more than likely, we've reached the point where English and other skills will determine how far someone can advance on the job. ■

World GeoGraph

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to do something to break the impasse. The something they decided to do was invest tax dollars in some exemplary software to show what was possible and desirable. They believed this would drive the demand both for hardware and for more software of comparable scope and quality. The development of *World GeoGraph* was in part financed by those tax dollars.

"Maps are a wonderfully compact, efficient and evocative means of human expression."

After many hours now with the software, my overall reaction reminds me of Alan Kay's widely reported response to the Macintosh: at least it's good enough to criticize. I mention this up front lest the criticisms below be mistaken for a pan of the product. I've wanted a "living map" (as the creators bill this product) for almost as long as I've wanted a supercomputer I could carry around like a notebook. Maps are a wonderfully compact, efficient and evocative means of human expression. I love a good atlas (*The London Times Atlas of World History* is probably my favorite) and have strongly suspected that one which could be hooked to a database and made to change color before my very eyes would provide much provocative food for thought. *World GeoGraph* confirms that suspicion even as it reveals that we need both hardware and software design to be much better to really do the job.

In one of the product's modes, you're able to continually re-color a map of the world to reflect how the 177 countries in the database divide into quartiles relative to particular characteristics: amount of arable land, population, population over 65, death rate, birth rate, literacy rate, number of televisions (or radios or automobiles or telephones) per 1,000 members of the population, etc. In another, you pick a country and re-color the map to show how your country ranks in each category relative to the rest of the world: who has more arable land, for instance, and who has the same and who less. And maps aren't the only interesting ways to display the data. You can look at bar graphs showing how countries stack up against each other, and you can view correlation tables to see how several variables distribute relative to each other.

That's the mode I was in when I noticed what a bizarre little profile the country of Qatar presents if you happen to say "find the countries that have more than 400 TV sets per 1,000 persons and show me how those same countries stack up in the literacy rate department." There are only five such countries, it turns out, four of which are in the top 20 percent in the world, literacy-wise, and one of which is in the bottom 30 percent. A quick flip to what's called the data table display revealed that the country in the bottom 30 percent was Qatar. A little more manipulation revealed that Qatar is in fact fifth in the world in television sets per 1,000 persons, first in the world in military spending per capita, first in energy consumption per capita and second in energy production, and 131st in literacy.

So where is this Qatar, I wondered, calling up the world map for a visual check. Uh oh. Tilt. Yes, the product automatically visually identifies whichever nation you pick in the "Locate Nations . . ." list (by flashing it and/or coloring it black), but it can do so only within the limits imposed by the resolution of the display. It responded to my "Locate Qatar" request by replacing the world map with the appropriate regional one; though I now could see where Qatar was on the regional map (on the Persian Gulf, opposite Iran), I had not seen where it was in relation to the rest of the world. And compounding the problem, when I used the "zoom out" feature to zoom back through the appropriate continent map to the world view, the map did not highlight the area in which Qatar was located on each successive map.

A better design would replace the dialog box with the world map again, now with a flashing box around the region about to be zoomed in on. Better still would be the visual effects plus a scrolling list of countries off to the side of the map so that no "obscure the map, uncover the map" events were necessary at all. Indeed, the more you use the product, the more this becomes a general criticism. Between every "show me this" and "well, okay, then show me that," there always seems to be at least one intervening on-screen event. When I saw entries for both military spending as a percentage of GNP and military spending per capita, I wanted to flip the map between them to see how much the categories overlapped. But the program's standard method of doing so, through the "World Quartiles . . ." command, produces an obscuring dialog box the same size as the one already mentioned, and the change of color called for by a new category choice takes place *behind* that box, where I don't get to see it happen! Other commands—"Compare . . .", for instance—cover the whole screen. It feels more like flipping pages in a book—albeit an exceptionally good book—than like exploring a living map.

You can glimpse what it ought to look and feel like by selecting first one of the military spending categories and then the other, and using "Undo" to flip between them. Thanks to the slowness of the GS, the process still feels a little sluggish, but at least it lets you focus your eyes on a single country or area and keep them there while the color change happens. You soon discover that two maps are not enough, that you wish you had several in the rotation, but it still feels magical and interesting enough for many hours' worth of thoughtful

"It feels more like flipping pages in a book—albeit an exceptionally good book—than like exploring a living map."

browsing. Even as is, the product is one heck of a little research tool—sexy enough to help sustain student interest, and powerful, flexible and substantive enough to let them pursue interesting, thought-provoking questions, and print their findings as illustrations for their reports.

So, did we California taxpayers get our money's worth (beyond, that is, having the right to buy a pretty nifty product at a substantial discount)? I'm not personally bent out of shape except on one very important issue. Users are allowed to add only three categories of their own to the database and cannot change the data for the categories already entered in the shipping product. I quote from the manual: "Because of the complexity of its central 'living map' concept, it was necessary to 'freeze' the data in *World GeoGraph*, preventing users from modifying it . . . MECC plans to release inexpensive updates of the *World GeoGraph* information disk."

"Even as is, the product is one heck of a little research tool—sexy enough to help sustain student interest, and powerful, flexible and subtantive . . ."

As a general policy, the State should always react with deep suspicion whenever the wizard wraps his robes about himself and pronounces the matter too complex for mere mortals to understand. And if generally true, surely that is most especially true in matters of education. "Because of the complexity of the 'living map' concept," is not an explanation, it's an obfuscation. The manual that accompanies the product is in fact most interesting and useful when it talks about the judgment calls that had to be made about particular data categories—even including names and who disagrees about whether particular places should be given nation status. I think taxpayers, in California or out, deserve similar consideration in this matter of the data already in the database.

We should get to decide whether the offered explanation is too complex for us to understand, in which case we'll cheerfully buy the update every year just for convenience's sake, no matter how much we understand about the complexities of the living map concept. But so long as our expectations for what we can understand of this technology remain low, so also will our capacity for transmitting its usefulness. Seems to me the California State Department of Education should be vigorously insisting on our ability and need to know, instead of participating in protecting us from the possible consequences of our ignorance.

If you have the equipment, by all means get it and put it to use, keeping all the while a running list of what you wish it did better. Then bring your list up tiresomely and relentlessly with every hardware and software representative you meet. And if you don't have the necessary hardware, but do have hardware that'll support at least 16 colors on the screen at once and uses disks that hold 720K or better, start harassing both your hardware manufacturer and MECC for something better—for *your* computer.

World GeoGraph requires an Apple IIgs with a minimum of 768K of memory and a 3.5-inch disk drive, though two drives or a hard disk are recommended. If you have more memory, it takes advantage of that fact and uses the disk drives less often. It costs $139.00 (except in California where the price is $85.00) and comes with a thorough manual and set of lesson plans. MECC's address is 3490 Lexington Avenue North, St. Paul, MN 55126. Phone, 800-228-3504. Minnesotans, call 800-782-0032.

David Grady formerly edited The Grady Report: Personal Computers in American Education, *and now works as education specialist for Next Computers, Inc.*

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SUCCESS II:

Computers Brought to Hard-to-Reach Learners

by Tammie L. Bentley Fish

SUCCESS II, a computerized literacy program funded by the Department of Labor for two years, serves Jay and Randolph Counties in Indiana. The Department of Labor awarded the East Central Private Industry Council a $292,000 grant for the project as designed by Community and Family Services, Inc., a non-profit community service organization. The unemployment rates of Jay and Randolph Counties—7.3 percent and 9.9 percent—respectively, are two of the highest in Indiana. The populations of both counties contain high proportions of high school dropouts.

In this economically depressed rural area, the SUCCESS II outreach network has targeted for computerized remediation groups which are typically difficult to reach and serve—offenders and ex-offenders, teenage parents, older dislocated workers and the rural homebound. Since July, 1988, the program has matched volunteers with 30 residents in need of basic reading and math skills. Of the learners, 43 percent are male, 80 percent did not finish high school, 40 percent receive food stamps, and 16 percent receive Aid to Families with Dependent Children.

Under the program, volunteers bring a battery-powered, user-friendly portable computer—the Epson Equity LT—to the participant's home or to a designated remediation site, where they provide one-on-one tutoring. The software, the Basic Skills Training Program by Computer Learning Works, teaches basic reading and math at levels three through 10. Benefits of the computer-aided instruction are two-fold: first, learners increase their reading and math skills at times and places which are convenient to them; second, they learn the basics of working with computers, a necessity in today's job market.

SUCCESS II is one of few programs of its kind in the United States (and one of two in Indiana), combining at-home computer remediation with work experience. Eight participants in each county receive a ten-week module, consisting of four hours of intensive remediation and four hours of work experience per day, five days a week. Participants' employment through the module is wholly funded by the project's Department of Labor grant. In addition to the intensive work on basic skills, participants benefit from the training gained in the work experience. They also learn to 'work' eight hour days again, they gain reference for future job placement, and increase their confidence in job search activities.

For other participants, the average number of hours of remediation is 60.25. The average reading improvement of the six participants who have completed the program's remediation portion is 2.4 grade levels; average math improvement is 2.7 grade levels. These averages exceed the proposed 2.0 grade level improvement established as a goal in the SUCCESS II proposal. Although the program does not address General Equivalency Degree requirements, it has been found to be an asset when combined with ABE/GED programs. A second proposed goal of the program is to place 75 percent of participants in unsubsidized employment.

SUCCESS II is an expansion of a previous SUCCESS model for 'at risk' youth at Jay County High School. SUCCESS II represents a partnership between basic education personnel, the criminal justice system, employers and the Job Training Partnership Act.

Tammie L. Bentley Fish is public relations specialist for the SUCCESS II project. A 1988 graduate of Purdue University, she lives on a small farm outside of Portland, Indiana. She can be contacted by mail at East Central Indiana Employment & Training Services, P.O. Box 1069, Portland, IN 47371-3169 or by phone at 219-726-6571.

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Project Report:

Cutting the Costs of Illiteracy in Deep East Texas

by Dr. Bruce Payette

Two thousand people are on probation in Nacogdoches and Shelby counties in Deep East Texas. Of these, 56 percent are unemployed and retired persons, students, and non-working or partially employed mothers. Forty-six percent of those on probation have achieved less than a Graduate Equivalency Degree (GED) education.

The *Job Readiness Program: Probation/ Education* provides intensive educational and vocational training for people on welfare, probation and parole, and incorporates computer-aided instruction with counseling. The program satisfies enrollees' conditions of probation or welfare assistance, and reduces the risk of recidivism and/or their need to rely on public funds. All participants meet JTPA criteria, and under section 123 are eligible for job placement.

Begun in January, 1989, the project is administered by the Stephen F. Austin State University's Department of Counseling, and is funded by the Deep East Texas Council of Governments and the Deep East Texas Private Industry Council under section 123 of the Job Training and Partnership Act (JTPA), with cooperation from the area's law enforcement and welfare agencies. Broad objectives include: providing the academic competencies necessary for the GED certificate; developing job readiness and job search skills, accompanied by computer awareness and literacy; reinforcing pre-employment work maturity skills.

Of the 28 participants in the Shelby County program, seven (25 percent) have passed the GED. One of these then enrolled in Lamar Beaumont University. In the Nacogdoches program eight (10.6 percent) of the 75 participants who have completed training have passed the GED. Eleven others (14.6 percent) have passed all but the writing section.

The program also addresses the needs of people on probation with skills of less than fifth-grade equivalency. Despite the limited academic abilities of these enrollees, GED preparatory work would nonetheless be mandatory if basic skills training weren't available. Adults with high school diplomas aren't excluded from either section if it seems they could profit from refresher-type training.

The Job Readiness Program deals directly with four of the items on the Texas Adult Probation Commission Risk Assessment form, and six items on the Needs Assessment form—forms which are used to determine the supervision requirements of people on probation. The program aims at reducing students' supervision needs by improving their educational grade-level attainment and their employment status. The result is a reduction of the Probation Department's supervision caseload. Preliminary findings on six cases show that the risk score drops an average of 5.6 points, and the needs score an average of 17 points upon satisfactory completion of the program. Similar benefits are expected from learners who enter the program from the Department of Human Resources.

In both counties, the program has been cited as a JTPA model by the Texas Department of Community Affairs. JTPA funding, roughly $42,000 for Shelby County and $47,000 for Nacogdoches County, was renewed in May 1989. With these funds the project operates two separate labs, handling about 15 students in each of the four 10-week sessions run every year; the project relies on close attention to individuals' needs, rather than giving cursory treatment to a high volume of learners.

Program participants work 20-minute sessions on Shelby County's two and Nacogdoches' three Apple IIe computers. Each facility is staffed by a monitor, with graduate and undergraduate students from the university employed as tutors.

Computer skills sessions begin with games, with touch typing learned on a Commodore 64 using The Educator ($11 by Melody Hall), and with other simple applications. For instance, Chevy Tech, available from General Motors for handling and disk costs, enables users to estimate the costs of all GM car models.

The general curriculum includes standard GED preparatory materials, math and reading skills, and a complete set of 24 job-readiness modules from Vision Software ($14 per module). Before leaving the program and applying for jobs, every student also completes a resume on Resume Writer. The program blends work on the student's academic curriculum with lessons on nutrition and stress management, and with individual counseling.

The integration of lifestyle and academic instruction enhances the students' motivation and their commitment to the program: Early on, stormy weather results in reduced attendance, even though students can take advantage of transportation by JTPA van to the facility. As they advance through the program, however, the same students will attend when they're ill or otherwise inconvenienced. By gaining employment skills and, hopefully, a GED with substantial computer literacy skills, they are able to break free of public assistance and begin to depend on their income-earning abilities.

Dr. Payette is an assistant professor in the Department of Counseling at Stephen F. Austin University. He can be reached there at P.O. Box 13019, SFA Station, Nacogdoches, TX 75962-3019, (409) 568-1076.

Hypertext

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programs at their schools. "Nancy and I teach at different schools, but we went to the state's summer technology institute in Long Beach three years ago and got started on this. I had been dabbling on the Mac, and we began generating lessons. Then when HyperCard came out, we really hit the ceiling.

"We can generate our own lessons, directly addressing our classes, our objectives, our textbooks. And from what I understand, our software is at least on a par with commercial educational software." HyperCard, released in 1987 as the first commercially available hypertext software, will be followed this year by MS-DOS versions capable of running on IBM-compatibles.

Hogg, a curriculum expert in social sciences at Pasadena High School, focuses on the content of the lesson

"You don't need 20 Macs at a school site to use HyperCard effectively."

cards. "We have a HyperCard unit on South Africa, which is keyed by video clips from the documentary *Witness to Apartheid*, and we supplement that with excerpts from the autobiography of Malcolm X. When he writes about abuse that he experienced in this country, a lot of the kids are shocked. It reinforces the concept of human freedom." Other units have addressed figures such as Albert Einstein—and in the works is a new unit on the student demonstrations in China.

After viewing the information, the LEP students may write stories or essays on related topics, working with those essays for extended periods of time. Hogg's resources in Pasadena High's LEP program are much more limited than those of Blair's Boot Lab—she has just one Mac, a printer and an overhead projector. Most first drafts are mapped out and then written on paper, after which she or the student enters the draft into the microcomputer. 'Hunt and peck' typing is all that's required of students in either lab.

"The focus of our program is on using the students' own writing," Hogg says. "The spell check program really helps to learn spelling, and even grammar, because you click 'suggest' and all the different forms come up. The student has to recognize the correct form, which is especially important for English."

Hogg's program places the students, between ages 14 and 17, in three levels. First-level students, who are non-literate in English, begin working with a simple sentence, with the goal of being able to write paragraphs by the end of

Out of Danger

The following story was written, in roughly one week, by a Level III student in Nancy Hogg's LEP Program at Pasadena High School.

The scariest thing was when South Vietnam fell into communism in April 30, 1975. At that time, the war between America and North Vietnam ended. People thought it was the last war for Vietnam and the country would have peace from then on. A year later, Vietnam again engaged in the Cambodian War. During their rule, the government, education, economics, and so on, declined. After eight years, our life was dangerous under communism. People who lived in the city or countryside tried to get out of their beloved country to other nations such as Canada, Australia, Japan, West Germany, the United States, and Holland. These countries supplied their freedom. There were two ways for them to try to get out of their country. One way was to go through the thick jungles. The other way was to cross the ocean. Both of them were very dangerous ways to find freedom. Although it seemed dangerous to walk through the jungles or cross the ocean, they still tried to make it. However, some of them arrived to the land they wished or they died on the way.

Now I would like to tell you my story when I crossed the ocean to Thailand. I went to a small city in the countryside with a man who my mother recommended to me. He took me to see another man who I never met before. I arrived at the jungle with the stranger. In the jungle, I met eleven people who were my companions on the route. We stayed there about two weeks. At midnight, February 1, 1984, we left Vietnam on a small boat. It took us nine days from Vietnam to Thailand. On the route, we met a lot of trouble from the first day to the fifth day. Nothing happened to us in the day, but at night we met a storm. Our boat almost sunk in the ocean. It was broken everywhere. The water came into the boat a lot. We were so scared at that time. After five hours, the storm stopped. We were so happy but there was more trouble. We started to control our boat by sail. Furthermore, we were attacked by the pirates of Thailand. We were scared by these killers. They got everything they wanted. Our boat floated on the water about three days more.

Finally we came to Thailand where we got our passports to the United States. I am happy in this country which supplied me my freedom. From now on, my life is not in danger anymore. I am grateful for the things that the United States has done for me but I still miss my mother very much.

the year. Level II students begin by writing short paragraphs, and work toward a complete story. At the third level, students work from their stories toward more complex writing.

"The writing is so much better when there's incentive," Hogg says, "when they're familiar with an interesting topic and want to write about it, instead of answering questions such as what they would do with a million dollars. They have something to express."

Understandably, Hogg is still envious of the technological riches of the Blair Lab: "The writing of the kids there is really amazing. Some of my students only get access to a computer in their computer class."

"I used to spend four hours every other night on this. I really burned the night-oil," Miyagawa says. "It's not going to be done by a teacher who is not aggressive. Or else they have to get a trainer who knows both HyperCard and curriculum-design. It's not enough to know just one or the other."

Miyagawa and Hogg augment the text and database capabilities of HyperCard with a variety of audio-visual software and hardware. A scanner and OmniText software allow teachers and students to digitize images, recording them on disk in HyperCard to be played back as part of a lesson card. "Right now I'm working on a unit on China," Miyagawa says, "so I go through Time magazine and just enter each picture I want on a card with text describing the event."

With MacRecorder software, by Farallon Computing, Inc., speech can also be digitally recorded (as opposed to being synthesized by the computer, which is more limiting and less satisfactory). According to Miyagawa, "MacRecorder is the easiest; the metaphor you see on the screen is a tape recorder, with the familiar buttons. With a language subject, like syntax—say subject-verb agreement—we can have cards that model an example of a concept *and* what the example sounds like."

In the social science card-units, students can call up a picture on screen, read the text, and play back a recording of a student or instructor reading the text in English, Spanish, Mandarin or any other available language. "They can see images that they've seen on TV, say of Deng Xiaoping, and find out about them," Miyagawa says. With HyperAnimator, by BrightStar Technologies, the digitized images can be given limited movement as well. "They can see Deng, and have him say his own name. It's tremendously exciting."

"They can see images that they've seen on TV, say of Deng Xiaoping, and find out about them . . . They can see Deng, and have him say his own name. It's tremendously exciting."

The Boot Lab has also connected a laser-disk player to the Macintoshes, to create interactive video presentations. "The student clicks a button, and a part of a movie comes on," says Miyagawa. "We emphasize Optical Data Corporation's Science Program, which has units in both English and Spanish on earth science, physical science, space science and biology."

The Blair High School Boot Lab was initially funded as a three-year project under the federal government's Title VII program; the project received a two-year extension in 1985. "We were slow to get off the ground," Miyagawa says. "I think it took us half a year to get those Apple IIe's."

At Pasadena High School, Nancy Hogg dreams of the ideal LEP computer lab. "It would have one computer per student, of course. And it would be divided into video and classroom teaching-areas," to enable her to move freely between the two areas as she works with her students. "In the ultimate situation, I suppose, each student would have a multi-media workstation, so that they could have independent access to all the video and text and be able to write."

Meanwhile the Boot Lab has excited other teachers. "We're making plans to expand, to bring in the whole curriculum," Miyagawa says. "I think we've just hit the tip of the iceberg."

Rich Miyagawa may be reached at Pasadena Unified School District, MIS Office, Rm 105, 315 South Hudson, Pasadena, CA 91109. Nancy Hogg may be reached at 401 South Addleman Ave., West Covina, CA 91712.

Call for Articles

The AL&T Newsletter will accept articles and newsbriefs on the uses of technology in adult education. Please submit articles by mail on 3.5" diskette written in Microsoft Word or MacWrite, or via AppleLink to LIT.ALTP or LIT.LAIDLEY. Typed or printed articles will also be considered for publication. Please include your phone number and a brief biography. To submit articles, or to inquire about deadlines and our writer's guidelines, please write, phone or link:

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Computer Curriculum Corporation Up-Date

by Nancy Taylor and Julie Dickson

The following article was written to supplement "Five Big Systems and One Little Option," by Alan Weisberg, in our May 1989 issue. The authors are communications specialists for the Computer Curriculum Corporation.

Technology options for adult literacy programs seem to boil down to two choices: adopt a packaged solution or develop your own software.

But if you have ever written software, you know how time-consuming such a task can be, and how rarely one piece serves the diverse skill levels of adult learners. Your best choice may be to look for a solution that already works well, complements your program, gives you plenty of options, and saves you as much time as possible.

Widely used by adult programs, Computer Curriculum Corporation's computer-assisted instruction (CAI) system offers such a choice. The system's adult-oriented courseware includes basic math, reading, and language skills as well as English-as-a-Second-Language instruction and General Equivalency Degree (GED) preparation. The system constantly monitors the performance of each learner and individualizes instruction, practice, and tutorial interaction. Initial testing is handled by the system's Initial Placement Motion, which determines a learner's functional skill level during the first 10 CAI sessions.

For adult learners with low reading skills, CCC's new Reading Network course is particularly appropriate. Course authors Maureen Hay and Susan Awbrey interviewed instructors in adult learning centers, including the California Department of Corrections, and examined standard assessment tests and materials for adult basic literacy. Both authors are certified reading specialists, each with 10 years of experience. Awbrey is currently active in an adult literacy program.

What they found was a need for solid individualized reading education with a focus on real-life tasks that do not insult an adult learner's intelligence. Because the adult non-reader population crosses age, gender and race lines, the graphic illustrations included in the course had to encompass these perspectives as well. The title "The Reading Network" was chosen because it focuses on the idea of people working together, and because "adult literacy" can, in a course title, stigmatize learners—most people realize that an adult literacy course is one for adults who can't read.

The Reading Network, designed for adult non-readers, incorporates audio, color and graphics, and provides comprehensive individualized instruction in basic skills and applied and integrated reading. The course is also appropriate for older adolescents. In its first release, the course will treat low functional reading levels and contain roughly 60 hours of material. The next release of the course will include material to bring learners up to a reading level appropriate for CCC's GED Preparation course.

According to Hay, The Reading Network includes tasks very much like those people confront in everyday life. There's nothing childish or fantasy-land about it," she said. The Applied Reading strand includes realistic materials in several essential content areas: health and safety, consumer information, news resources, standard forms, community services, and entertainment. Within the Integrated Reading strand, 'twist-a-plot' stories are presented in comic-strip formats; the learner makes choices to determine different, but plausible, story endings. The vocabulary also reflects a focus on life skills. In developing the course, Hay and Awbrey combined traditional vocabulary with functional vocabulary to create a core list of words important to adults in daily life. The vocabulary is presented in a variety of activities, helping the adult learner to make generalizations about usage in different contexts.

By placing The Reading Network within its proven CAI system, offering individualized instruction with audio and visual support and encouragement, CCC increases the program's ability to help the adult learner succeed.

The CCC's CAI system runs on networked microcomputers, including the IBM PS/2 Model 286 and the Tandy 3000. CCC also offers a low-cost hardware alternative using ATARI ST microcomputers and CCC's proprietary networking hardware and software. Costs may run as low as $350 per student per year.

Nancy Taylor and Julie Dickson can be reached by mail at CCC, 21750 Del Medio, Mountain View, CA 94040.

United Way Announces Literacy Grant

As a first step in its literacy initiative, United Way has announced a $100,000 literacy challenge grant. The grant, funded by the UPS Foundation, is designed to aid up to six community projects in upgrading the reading, writing and critical-thinking skills of adult literacy students.

The request for proposals was sent to all local United Ways on June 23, 1989. Applicants eligible for funding include United Ways working independently or in partnership with local adult literacy providers. Proposals are due August 17, 1989. United Way will provide additional challenge-fund opportunities in adult literacy throughout the year. For details about the UPS/UWA Literacy Challenge Grants, phone Annette Laico or Beth Broadway at 703-836-7100.

AL&T Newsletter Reader Survey

For new and continuing subscribers.

Please complete this form to help us better serve your needs and interests. Your name and other information may be provided on the reverse side.

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Hardware used in literacy work:

6. ❑ microcomputer (please list types)

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_____

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Software used in literacy work (please specify):

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Curriculum Aids from the Adult Literacy and Technology Project

Guide to Recommended Literacy Software. The Guide lists over 80 adult literacy software titles with cost, necessary hardware, subject, and test-preparation goals. The listing is accompanied by a detailed description of the program, and evaluations of its strengths and weakness.
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"Promoting Technology" Videotapes. Each videotape, of roughly 15 minutes' running time, employs interviews, on-site footage and voice-over to illustrate the use of technology in adult literacy instruction. The accompanying print units, including photos, and graphics suitable for the creation of overhead transparencies, address how to choose appropriate software and hardware, and detail the use of technology with adult learners.

Series includes:
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Our four-issue newsletter subscription is based on the calendar year. To receive all four 1989 issues, complete and mail this form with the appropriate subscription fee (see below). Back issues will arrive with the next current issue.

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- discounts on selected AL&T publications

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Technology Consultants
Adult Literacy and Technology Project

The Technology Consultants in the Adult Literacy & Technology Project have been active for the last three years, providing assistance to hundreds of literacy practitioners on a wide range of questions such as how to begin using technology, how to select software and hardware and how to find software for special-need learners. Requests for information have come from practitioners at many kinds of agencies: ABE, Laubach, LVA, universities, government, business, labor, community colleges and corrections.

The TCs, chosen for their literacy-related technological expertise, are 'on-call' for free or low-cost consultation, and for presentations at conferences. Please keep this list for reference.

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The Adult Literacy & Technology Newsletter

Summer Issue 1989

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Interview on Factory Automation

David Grady Reviews *World GeoGraph* Software

United Way's Adult Literacy Grants

CCC's New Adult Literacy Software

And more . . .

The Adult Literacy & Technology Project benefits from the gracious and consistent support of the Gannett Foundation.

Adult Literacy & Technology Newsletter

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Vol. 3, No. 3 Fall 1989

Computers and Learner Independence

Playing on Your Own at Playing to Win, Inc.

by Ed Gueble

Comparisons are odious, but absolutely fundamental...

Though its philosophy is similar to LEAP's, the Playing to Win Computer Center is a much different kettle of fish. LEAP is a literacy program that uses computers. Playing to Win is a computer center that uses literacy instruction. "Virtually everybody who comes to the center is learning some kind of literacy skill," says Antonia Stone, the center's executive director. "A lot of the people who come do so because they see computers are a part of both literacy and life skills—even the teenagers who are dropouts, or the kids in the afternoon open hours."

"They come to do what they want to do," Stone says, "but anything to do

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LEAP-Frogging One-On-One in Richmond: Where Do Computers Fit In?

by Ed Gueble

"It's only in somebody's fantasy that you can plug somebody in to a machine and have them learn, even with the huge integrated systems."

I met Clyde Walker on a visit to the Literacy for Every Adult Project (LEAP), in Richmond, California. Walker, 74 years old, tutored 82-year-old Jimmie Holliday, who'd had only one week of schooling in his life. Walker tutored him in reading and writing for three years, and learned to use computers in the process. He now tutors a younger man, and publishes the LEAP newsletter, and two other newsletters as well. "Really," Walker says, "this tutoring has been better for me than for the students."

The computers in the learning center benefitted Holliday as well. Despite great difficulties with handwriting, he was able to type well enough to send the first letters of his life to his children. "I could just set him down to the machine," Walker says. "The computer, it's fantastic. A dumb old man like me can learn 'em without any problem." In more ways than one, Walker and Holliday are far from the norm at LEAP. The learning center houses four Apple II computers and six Macintoshes in a small complex about one hundred yards from the Richmond Public Library, where the project's printed literacy materials are available. With about 100 learning pairs—tutor and learner—matched and working under the project, use of the center fluctuates between five and 30 one-hour visits per week. Through the entire day of my visit, in that slow period of September between summer and fall, one learning pair switched on a computer.

Learner-centricity

LEAP is learner-centered. Ideally, the LEAP tutor-learner relationship, focused on one-to-one communication and instruction, acknowledges the learner's right to participate in the information world, and elicits the first steps toward that goal. "The tutors' two-day training, or a good share of it, isn't focused on the specifics of learning how to read," says Susan McCallister, the project's learning center coordinator. "A huge amount of the training talks about the relationship that you have to the learner, how much you need to learn from your learner, in order to teach them." The learning pair works, via dictation and hunt-and-peck typing, on letters and biographical stories created by the learner, and on news articles and other printed material that reflect the learner's interests. The tutor is charged

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The 1989 AL&T Conference

OK, start...

Four hundred ninety-eight attendees enjoyed over 100 presentations on a wide variety of subjects relating to adult education at the AL&T Conference, Hosted by Louisville, Kentucky, July 23-26, it featured keynote addresses by luminaries including the Louisville Mayor, Jerry Abramson, the Executive Vice President of ABC, and Martha the Governor's wife, head of her own literacy group.

Start again...

As I see it, the job of an article on a conference may alternately be to convey the conference experience for the people who attended, in other words to give them a *post facto* understanding of where they were when they were there, or to give an account of the conference to people, potentially millions, who didn't get the chance or make the choice to go.

The limiting factors are the eyes and ears of the reporter, of course, which are only in one place at a time. At an AL&T conference, so many worthwhile events happen that no one set of organs can cover them all. An added limitation may be the reporter's mouth, spontaneously involving him or her in discussions which at the time seem to be damn enlightening.

I arrived a day early, actually, for extra enlightenment. IBM's education division held a seminar for the AL&T Technology Consultants, the morning of from the hardest rain I have ever seen, introducing new software and hardware products, and outlining their vision of an educational system that, ideal from top to bottom and connected to the 'outside' world. Naturally, as that I am, I was fascinated, and spent a great deal of time using their software to learn about electricity, figuring I should start at the bottom. The Technology Consultants, by the way, are 10 smart and very well-informed people—much of this seemed old-hat to them. Give them a call when you need some help planning, or implementing your plans.

Bright and powerful people did address the whole conference subsequently. Mayor Jerry Abramson introduced the City of Louisville with pride, then went on to delineate the programs and overall commitment to literacy undertaken by the state of Kentucky as a whole, including Kentucky Educational Television and the creation of the National Center for Family Literacy. Martha Wilkinson, wife of Kentucky's governor, established her credentials as the leader of 'Martha's Army,' the state's large-scale volunteer literacy effort.

Betsy Brand, Deputy Secretary of Adult and Vocational Programs, presented the Department of Education's Basic Principles of Adult Education, released in April, and lined in the Spring issue of the AL&T Newsletter. (Just one perhaps be summarized as: Adults should learn to read and write—especially things for work—and education better get competitive, and money from business, so that this will happen. My notes of the conference say that everyone was waiting for the government either dies or drops, pathetically filled with ends.

James Duffy, President of the American Broadcasting Company, represented ABC quite well—I thoroughly enjoyed his video and speech, although I can't quite recall what they were about. By being there and contributing, however,

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Newsbriefs

The 87,000-member **International Reading Association,** with the AL&T Project among the contributing sponsors, will hold the *North American Conference on Adult and Adolescent Literacy*, January 12-14, 1990, in Washington, D.C., in support of International Literacy Year. Information is available from the IRA Public Information Office, 800 Barksdale Road, P.O. Box 8139, Newark, DE 19714-8139, or call 1-302/731-1600.

A conference of the **Association for Educational Communications and Technology** will also take place January 12-14, 1990, in Washington, D.C. Phone 1-202/466-4780 for information.

Bright Star Technology, maker of HyperAnimator, now offers the RAVE Driver Installer program, $19.95 for registered owners of HyperAnimator v1.5. When the installer is bound to HyperAnimator 'talking agent' stacks, those stacks can then be posted on bulletin boards or shipped to other users as public domain software, shareware, or commercial programs.

Contact Bright Star at 1450 114th Ave. S.E., Suite 200, Bellevue, WA 98004, or 1-206/451-3697.

Literacy Volunteers of America *Conference '89: Turning the Tide Toward Literacy*, will be held November 2-4, 1989, in Virginia Beach, Virginia. Contact LVA Conference '89 Registration at 5795 Widewaters Parkway, Syracuse, NY 13214, 1-315/445-8000.

The National Workplace Literacy Conference '89 will take place November 6-8, 1989 in Rochester, New York. Contact Workplace Literacy/RIT, 1-800/441-4540 for information.

Report on Family Literacy: In March, 1989, Ruth Nickse completed a 40-page report, *The Noises of Literacy: An Overview of Family and Intergenerational Literacy Programs*, for the Office of the Secretary of Education. To receive a copy of this report, contact Eric Evans at 1-202/357-6164.

In My Opinion

Technology Futures

by Terilyn C. Turner

"Technology connects us with the future," writes poet Karen Meadows. In fact when we talk about technology we often link our comment to a particular point in time—"now," "then," or "to come." At the Adult Literacy & Technology Conference in Louisville, John Fleischman spoke of our field as being in its "infancy," but sometimes we're reminded of a sci-fi movie where the new-born monster grows more rapidly than anyone expects or can control.

How do we deal with a field that changes so fast that predictions have a validity of six months at the outside? In the September issue of *Educational Leadership*, Christopher Dede suggests that the most important barriers to the new information technologies' impact on education "...will not be technical or economic, but conceptual and organizational; and, unless controlled, the outcome of these changes may be undesirable. We must begin shaping the use of these emerging tools now if we are to have a bright educational future."

I think that adult literacy practitioners need to envision the future as clearly and accurately as we can and share our visions with each other. By projecting the future or different futures now, we have a far better chance of taming the monster-to-come and managing its development.

The futures of both literacy and technology are most likely to be found in areas other than education, so we open ourselves to apparently extraneous incidents. If we pay attention, they can trigger the *Ah Ha!* factor, surprising and exciting us without necessarily having an immediate application to our field. We can best envision the future by identifying where new things seem to be happening and then asking ourselves,

The futures of both literacy and technology are most likely to be found in areas other than education, so we open ourselves to apparently extraneous incidents. If we pay attention, they can trigger the* Ah Ha! *factor.

"What does this mean for literacy? What does it mean for our learners? What does it mean for me?" Let me give a few examples of things that have tickled my technology fancy and triggered what I call the *Ah Ha!* factor.

Money machines or ATMs (automated teller machines) are a case in point. In St. Paul, Minnesota, all AFDC recipients receive their benefits through ATMs, which eliminates the need to send them checks. Within the next six months, food stamp recipients will be able to use modified ATMs in the checkout lanes at grocery stores, eliminating the need for the stamps themselves.

What does this mean for literacy learners? Well, for one thing clients will come into our programs already familiar with computer terminals. For another, it represents empowerment at a brand new level. In St. Paul we are discussing the possibility of using ATMs to deliver information on alternative literacy programs and daycare locations. Beyond simple communication lies the possibility of direct instruction: What if every ATM in the country provided some form of basic skills instruction?

My interest in ATMs began on a hike in the Grand Canyon. I was running low on cash and growing somewhat concerned. As I rounded a cluster of pine trees, there was an ATM! Within the next six months I found myself in Puerto Rico in a similar situation (low on cash, not hiking) and I began looking for an ATM. My traveling companion said, "You'll never find a machine, and even if you do it'll be in Spanish." I said, "If I can find one in the Grand Canyon, I can find one in Puerto Rico." And I did! When I put in my card, the screen showed, "Greetings Terilyn C. Turner! Would you like your directions in Spanish or English?" That's when my *Ah Ha!* factor was triggered, and I've been thinking about the implications for literacy instruction ever since. What if all of our software programs came in multiple languages and the choice of language resided with the learner, not the teacher?

The *Ah Ha!* factor occurred again when I learned that the only information the Chinese students received during the recent crisis in Tiananmen Square came through fax machines: when the borders were closed to outside mail, newspaper articles describing daily events were faxed to the students inside.

As with most new technologies we are just beginning to understand fax machines' capabilities. We use them to plan conferences, order lunch, and get proposals to Washington on time. When will we begin to use them seriously for instruction? What if all learners had fax machines and could receive and send information wherever they were? Then we could fax them individually designed instructional plans.

The *Ah Ha!* factor occurred again in a pizza parlor that rents videos. If I can rent "Omar Sharif Teaches Bridge" for $3, why can't our learners get "Bill Cosby Teaches the Short Vowel Sounds?" Why not use camcorders to design individual video curricula? Along with a program in California, our adult literacy program in the St. Paul schools is planning pen pal videos for hearing impaired refugees. As costs come down,

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Software Review

First Impressions: Two Software Programs for ESL Students

by Martha A. Lane

ESL Writer

ESL Writer is a word processing program designed for students learning English as a second or new language. In addition to the usual writing and editing capabilities found in a word processor, this software analyzes what is written for correct spelling and grammar. But here's the unique part: the spelling analysis is based on the student's primary language.

If Spanish is indicated as the student's native language, the program looks for and reports the types of spelling errors Spanish-language persons make when they learn English. If the user is Asian, the word processing program is able to pinpoint many spelling errors commonly made by Vietnamese, Cambodian, Hmong, Filipino, Laotian, Chinese, Japanese, and Korean students of English. The program also has a "generic" or standard spelling checker. Since the program "expects" types of errors by language grouping, it can suggest the correct spelling for words ordinary spell checkers would not provide. For example, if Spanish students type "bery," the program will suggest both "very" and "berry" as possible word replacements. If Asian students type "lanch," the program suggests "ranch," "lunch," and "launch" as possible corrections.

ESL Writer checks for 12 of the most common types of grammar errors made by ESL students. If the student writes, *My mother has baby*, the program marks the sentence with an asterisk and gives this hint: *<?> baby. MISSING WORD.* Misspelled words are underlined.

The software package includes an attractive 46-page manual that gives generally clear explanations and some excellent teaching suggestions. It comes in a three-ring binder with two copies of the double-sided student disk and two copies of the teacher disk.

ESL Writer is best suited to intermediate or advanced ESL students who are quite computer literate. Beginners will have considerable difficulty understanding many of the grammar error explanations and the editing and help menus.

It is expected that teachers will pre-configure the program for students. The program will check either spelling, grammar, or both, check capitalization, and proof the text as it is written or afterwards. The built-in dictionary contains at least 30,000 words (the documentation is a bit unclear on this point) and allows users to enter up to 100 other words at a time.

One drawback of the program is that ESL Writer can handle only short documents: up to four double-spaced or two single-spaced pages. Students therefore must break up long documents into many separate files.

ESL Writer, Scholastic Software, Inc. 2931 E. McCarty Street, Jefferson City, MO 65102, 1-800/325-6149. Required hardware: Apple IIGS, IIc or IIe with 128K; one 5 1/4" drive; printer optional. Price: $99.95.

SELF

(Spanish-to-English Learning Focus)

SELF, in contrast to ESL Writer, provides structured drill-and-practice, with two advantages for beginning students: it requires little or no previous computer experience, and it is loaded with examples for improving and correcting grammar. Its package includes a 62-page manual in a three-ring binder (written in both Spanish and English), a program disk and three lesson disks (three bilingual lessons and a diagnostic exercise on each disk).

Like ESL Writer, the program helps with the most common grammatical errors made by Spanish-speaking students of English, including "be" in the present tense, adjectives, possessives, and matching verbs and prepositions.

Users may select Spanish or English menus, help screens and instructions throughout most of the program. Screen layout is simple, uncluttered and easy to read, and it's very easy to move around in the program and to exit from any point.

Each lesson contains a tutorial, an exercise, several levels of help and a review. The lesson's introduction presents a point of grammar or structure and gives a number of excellent examples. The exercise itself presents 15 to 20 multiple-choice or short-answer questions based on the grammar covered in the introduction. At the completion of the exercise, students are given scores based on correctly answered questions. A review section is available to test students on questions skipped or incorrectly answered during the exercise.

Both volunteer-staffed, community-based ESL programs and institution-based ESL programs should find SELF a good addition to their beginning ESL software collections. This is the best program that I have seen from American Language Academy.

SELF, (Spanish-to-English Learning Focus), American Language Academy, 114226 Rockville Pike, Suite 200, Rockville, MD 20852, 1-800/346-3496 or 1-301/984-3400. Required hardware: Apple II+ or IIe, IIc, or IIGS, 64K, one 5 1/4" drive. Price: $164.95.

Martha A. Lane is an adult literacy consultant and a member of the AL&T Steering Committee. She can be reached at 601 E. Anapamu Street, #231, Santa Barbara, CA 93103.

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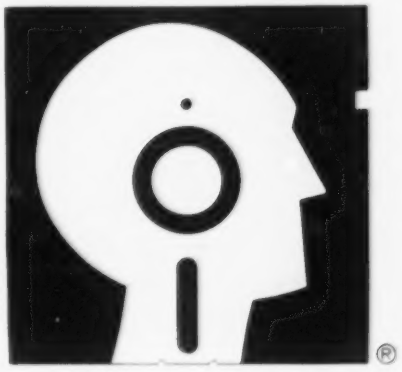

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Technology Transfer: A Resource for the Resourceful

by Don Egner and Ed Gueble

The Stevenson-Wydler Technology Transfer Act of 1980, updated in 1986 and 1988, mandates that federal laboratories make a wide range of know-how, software, equipment designs, and other products developed for government use available to the public. In addition, the scientists and engineers in these labs often make *themselves* available, as volunteers, to projects in their communities. Literacy groups have been among the prime non-profit beneficiaries.

Past technology transfers have included Department of Defense fiscal planning software now used successfully by a number of cities in Maryland, and battlefield computer technology tied into the development of devices to aid people with disabling movement restrictions. Materials for keeping the flat roofs of elementary schools from leaking or keeping pigeons and graffiti off of buildings are mundane but nonetheless important developments that have also been shared through these partnerships.

Scientists and engineers in these labs often make themselves available, as volunteers, to projects in their communities. Literacy groups have been among the prime non-profit beneficiaries.

Most technology transfer is overseen by the Federal Laboratories Consortium for Technology Transfer (FLC), a liaison organization for more than 500 laboratories and smaller research and development stations. The FLC's aim is to "put specific technological solutions in the hands of people with specific problems," according to Chairman Lorne Schmid. "The National Science Foundation, the Departments of the Navy, Army, and Air Force, the Department of Energy…any agency that has a significant commitment to R&D will make technology available," he says.

However, the public's access to federally developed technology is hardly an invitation to a free smorgasbord of educational solutions for literacy providers. Because the FLC isn't in business *as* a business, interesting technology may not be flexible enough to meet the public's needs unchanged. The costs of additional development, installation and administration must still be borne." The technology available for transfer isn't 'off-the-shelf' type stuff," Schmid says, "it isn't nearly ready for the marketplace." Consequently, the bulk of transferable technology goes to the industrial sector, where capital is available to adapt or further develop government know-how.

The largest transfer to date has been an educational product: the civilian version of the Job Skills Education Program (JSEP), developed jointly by the Army, Florida State University, and Ford Aerospace Corporation at a cost of $11 million, is currently in pilot testing. JSEP takes each student through an individualized curriculum appropriate to the student's job plans, teaching computer use, and skills ranging from basic spelling and arithmetic to oscilloscope reading and trigonometry. (For more information, see ***Newsbriefs*** in the May 1989 issue—Editor.)

In 1986, the National Commission on Libraries and Information Services (NCLIS) investigated several avenues for transfer of military reading improvement projects to targeted library-based literacy programs. One of the more innovative solutions—a hand-held vocabulary tutor, with keyboard, liquid-crystal display and speech synthesizer—showed great merit. However the projected cost of developing and producing a civilian-oriented speech cartridge kept this proposal from getting off the ground.

NCLIS ultimately administered a pilot program transferring the Navy's Language Skills Computer-Assisted Instruction (LaSCAI) to one rural and one urban library in Maryland. LaSCAI was developed to provide remedial instruction in technical vocabulary and technical reading for Navy recruits and so took its content from their manuals. The transferred version addressed spelling, word definitions and usage, sentence structure, comprehension and paragraph flow.

More important, LaSCAI, also called "the Wisher program," contained a powerful curriculum-authoring utility, giving civilian literacy providers a means to introduce and adapt the content of their lessons. This capability allowed the Navy and NCLIS to transfer LaSCAI to the pilot libraries, in Weirton, West Virginia, and Baltimore, Maryland, with only minor adjustments to the program. These libraries had literacy projects already underway, and ran LaSCAI on their Apple IIe microcomputers (the Navy originally designed the program for the Apple II+.)

NCLIS researcher Christina Carr Young, reporting on the project, concludes that: "Additional program modification and documentation is needed in order to extend the use of LaSCAI, without extensive personnel backup, to other libraries. A single location is essential to administer the application of this program for other libraries, to serve as a clearinghouse for new materials and continuing R&D." (1986) Due to lack of funds, these recommendations were not implemented; researchers at the University of Utah later attempted some program modifications which have not been implemented in library programs.

The FLC began in 1971, when a few researchers in Navy labs decided to put their research to "better use," as Schmid

says. Their informal work was recognized by the NSF in 1974, securing federal funding for a program manager, although communication proceeded largely on an *ad hoc* basis. Then, with Stevenson-Wydler in 1980, the FLC was formalized and given full-time professional management. Under the act, government labs were required to transfer at least $20 million in technology annually through the program. In 1986, this amount was broadened to the current level, .005 percent of annual research and development spending. These funds are given to the National Institute of Standards and Technology, which disburses the money according to the dictates of the FLC. "Congress still didn't give us any money directly, they wanted to keep us independent of the government as far as possible," says Schmid.

FLC member-labs each sponsor an Officer for Research Technology Applications (ORTA) who acts as liaison between the labs and parties interested in technology transfers. Many labs also have community outreach and education programs, bringing scientists into contact with schools and other organizations; Schmid suggests that scientists from the labs would be willing to meet with adult education groups as well.

"Congress still didn't give us any money directly, they wanted to keep us independent of the government as far as possible."

According to Schmid, federal labs can also be used as sources for expert volunteers, who often are able to give advice and technical assistance to community groups in various instances, such as the installation of computer hardware or the design of software. Contact can be made through a lab's ORTA, who will be able to suggest scientists with the necessary skills.

The membership list of the FLC is available from Del Delaberre, FLC Coordinator, 1945 North Fine Avenue, Suite 109, Fresno, CA 93727. The National Technological Information Service, part of the Department of Commerce, reprints database searches of transferable technology in various fields, including computer-aided instruction, education, distance learning, and interactive video. For information, write the NTIS at 5285 Port Royal Road, Springfield, VA 22161, or phone 1-703/487-4650.

Reference: Young, Christina Carr. "Anatomy of a Technology Transfer: The National Commission on Libraries and Information Science Literacy Project." *Library Trends*, Fall(1986); v35, n2.

Don Egner, an AL&T Technology Consultant, can be reached at 5806 Pine Hill Drive, White Marsh, MD 21162.

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Technology Futures

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we need to find other ways to share our "home movies."

At my session on evolving technology at the AL&T Conference, participants envisioned the future adult literacy. One vision shared by a number of participants was of technology used for student assessment. The image was of a learning CAT scan, a device applied to the head and used for diagnosis and prescription of learning problems. Another vision was of a portable "wand" that could scan a printed page and "read" the material to the learner. Holographic simulations which could be used to teach skills for real-life situations was another vision shared during the session.

These are ideas and visions of the future that excite me, because I see a world for our learners where technology is readily accessible and information is available upon demand. I see a world where the roles of teacher, tutor, and learner are drastically altered, but greatly enriched and enhanced. I am interested in hearing from you your thoughts and visions of future realities for literacy and technology.

Dr. Terilyn C. Turner is Assistant Director of Adult Literacy and Special Needs for the St. Paul, Minnesota, public schools, and a member of the AL&T Steering Committee. She can be reached by mail care of this newsletter.

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LEAP's Haiku Tips

Clyde Walker, at the Richmond, California, LEAP Project (see article page 1) offers a haiku-composing formula. Authentic haiku poetry distributes 17 syllables among three lines (5-7-5), evoking an awareness of the natural world. The formula: Focus on a single object to start with, and

1. Name the subject—one word
2. Describe the subject—several words or phrases
3. Name the setting
4. Describe the setting
5. Tell what the subject is doing
6. Tell your feeling about the scene, or describe the mood
7. Go back and underline key words and phrases
8. Arrange some of the key words and phrases to express your feeling about the scene

Try to condense your thought into 17 total syllables. An honest expression is the goal. Confidence and the 'feel' of poetry will increase with each attempt. Use a computer, if you like.

Received by the AL&T Project

"Partners in Education," from Mindscape: a 16-minute videotape discussing the use of computers in the teaching of at-risk youth, with some attention to adult education. Available free to educators for 30-day loan with full copying privileges. Contact Doreen Barcellona, Product Manager, Educational Division, Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062, 1-312/480-7667

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LEAP

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with developing individual lesson plans, based on these interests and experiences, that lead to a special set of literacy skills defined by the learner's needs. The LEAP tutors, then, are the key to centering learning on the learner.

And what about the computers? "It's only in somebody's fantasy that you can plug somebody in to a machine and have them learn, even with the huge integrated systems," McCallister says. In her view, computer literacy forms part of a responsible, progressive agenda, helping to empower learners vis-a-vis the demands of modern culture. "We can see ourselves," she says, "as having an obligation to provide computer skills as one component in increased functionality." McCallister also sees computers, as used in literacy instruction, as potentially narrowing the nature of functionality. "There is a danger in technology," she says. "It kind of takes over. With a lot of literacy software you find your definition of reading determined by the machines." But the LEAP tutor-learner relationship is conceived as an antidote, whether the narrowing originates with the software or with other forces in society.

Functionality, in the opinion of Program Director Sharon Paston, translates into earning-power. "As computers enter nearly every workplace," she says, "familiarity with this technology becomes an increasingly vital job skill." As in many programs, LEAP has blended ideological and economic goals with considerations of educational effectiveness. To what extent is computer technology, the apparent vehicle and emblem of these goals, compatible with volunteer tutors working freely and individually with adult learners?

The need for structure

For Ayis Bateman, a volunteer with the project since it began in 1984, computer skills are also an important part of potential job skills and, she says,"it's more important in my opinion that students get jobs than that they learn to read." However, Bateman herself has in the past done everything she could to avoid working with computers. "I even quit one job with the state," she says. "I was a strong union person—I was sure computers were going to take our jobs. I was wrong, of course. I found out that for every computer in the operation you need 10 more people to take care of the stuff that comes out of it."

Retired from teaching, and from working as a trainer for the Social Services Administration, Bateman was at least somewhat prepared for the free-form tutoring responsibilities at LEAP. After the standard two-day orientation, she began working with three learners in a small group. "When I didn't know how to do something with the computers," she says, "I'd get so embarrassed."

She hadn't used computers when she'd staged large-scale training for the government, but at LEAP, in those first small-group sessions, she found a pressing need to stifle her "built-in fear" so as to work on the machines in the learning center. Her first students were three white males from the same neighborhood, who had gone to the same schools and knew each other. "In fact," she says, "they had a hostile attitude toward each other." Although the LEAP quarters were much smaller at that time, she found all three men could work more effectively there with her help than they could sharing the resource room at the library while she was teaching. And all three satisfied her agenda—they got jobs.

"When I didn't know how to do something with the computers," she says, "I'd get so embarrassed."

Despite the success she shared with them, however, Bateman's attitude is that of tutor *provocateur*; she is sure the program isn't as effective as it could be, both in terms of computer use and literacy training. "I see everybody floundering, I see a lot of time wasted," she says. "There has to be more involvement from the center, they have to do more directing whether they feel comfortable with the idea or not.

"I'm at odds with LEAP," she says, smiling a little—it suits her to be 'at odds' with the project, even though she likes and works with the people there. "I need to know, if I'm starting here, where I'm going and how will I know when I get there. We can't all make that kind of structure for ourselves." The learner-centered approach, when the learner has a pressing need to achieve 'functionality,' can shove responsibility for success on to the tutors; they're positioned between the learner's specific tastes, abilities, and needs. An effective learner-centered volunteer program must, on a fundamental level, be tutor-centered and tutor-empowering as well.

The learning triangle

In Susan McCallister's view, "Tutor attitudes are the most important factor that interferes with computer use." Drill-and-practice, graphics, word processing and spelling-check applications can spark a learner's interest, but computer skills may be difficult for the tutor to acquire, or may impede the tutor's ability to tailor a lesson plan to meet her learner's needs. To what degree do tutor attitudes about computers stem from lack of training, and from anxiety about technology? To what degree do they come from an unwillingness to consider the learner as an equal?

"There are no real criteria for selecting tutors," says volunteer gadfly Bateman. "People with missionary attitudes are great, but that doesn't mean they can teach." The LEAP school of thought, moreover, asks inexperienced tutors as well as former teachers to forego the authority and power roles that are familiar from classroom experience. Instead tutors must point their learners,

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right off the bat, toward the same active relationship with cultural information networks that they practice themselves.

However, points out McCallister, "even the most sensitive tutors have an inordinate amount of power—they are functional, they are reading, they have more control in the learning situation. And many of our students are protective of themselves, which leads them to participate in that power setup as well." Bateman has told me a few times, still with her ironic smile, that she wasn't a good tutor for the project because she didn't want to hear about her learners' problems and she refused to allow them to call her at home. Some tutors, in her view, encourage their learners' dependencies.

The computers at LEAP are seen as a means of disrupting hard-and-fast roles. According to Director Pastori, "With the computer the relationship becomes more of a triangle of learning, with the tutor often acting only when the student gets stuck." For inexperienced tutors, and non-computer users, planning a curriculum with the computer may seem too complex for a tutor to manage. "Some tutors don't like the center," Pastori says, "and so they never use it. We've begun to feel that there are students out there who might like to use the center, but who aren't getting the opportunity."

The learning triangle may pose a subtle threat to some tutors. As Bateman sees it, "some of them have their games, and the computer does a lot to explode the mystique of the tutor."

The measures taken

For whatever reason, learner empowerment at LEAP, with regard to computer use, has hit an invisible wall. The staff sees two paths over the wall: the first is to organize resources to make them more immediately useful to tutors and learners working together; the more direct approach is to make those resources available for students' independent work.

A 'scope-and-sequence' catalog of the software library is being developed to provide a thorough description of software programs, the needs they meet, and suggestions as to how they might be connected to other programs, resource books and to learners' other activities.

"We've begun to feel that there are students out there who might like to use the center, but who aren't getting the opportunity."

The catalog will also list materials created by tutors, including variations made for programs with authoring capabilities, and templates for activities on applications software *(see **"Playing on Your Own at Playing to Win,"** in this issue)*. Avis Bateman has shifted from tutoring to working on the catalog, along with Lisa Vance, a former volunteer who will be hired as staff when funds are available. "We have all this material," Bateman says, "books and books, catalogs and programs, but we don't have anything that tells us we can take this book and this program and use them together, or in a sequence. The assumption here is that tutors have unlimited time for preparation."

At least one of LEAP's assumptions, on the contrary, seems to be that tutors have limited time and patience, so that not much can be asked of them in addition to tutoring. "We've stopped short of requiring tutors to use the technology," Pastori says. "We haven't gotten that hardnosed. But in the last nine months we've made first-time tutors' attendance at the computer orientation mandatory."

LEAP is also beginning to train volunteers to work only in the center, teaching the technology as well as the language learning. And learners may be encouraged to volunteer in this role as well. Pastori says they sometimes learn computing more quickly because "not being able to read they've developed the ability to listen well and remember." Two learners have succeeded to such a degree that at a 200-person conference organized and attended by adult learners in the San Francisco Bay Area they conucted demonstrations of the project's software.

In planning a staff of volunteer computer aides and extended operating hours for the learning center, LEAP is increasing the likelihood that learning pairs will work effectively and comfortably on the computers. But full implementation of the center, as Pastori now sees it, will entail even greater learner empowerment. "We still want the tutor to be aware of what's going on, but we want to move the computer use away from being tutor-driven," she says. "We want to make it learner-driven. If the student gets comfortable with the software, then they won't need the tutor there." The center volunteer staff would assist learners who are working independently in recording activities and progress, and in bringing these records to the attention of their tutors.

Crossroads

The logical end-point of learners' empowerment is freedom from the need to be tutored. "Independence should be taught early on," Avis Bateman says. "A lot of tutors don't want that to happen. But tutors die, they get sick, they move away." Computer-assisted instruction affords a measure of that freedom while the student is still working at a basic level.

But logical end-points may have little to do with real needs. The key forms of human interaction that tutors offer—encouragement, guidance, listening and responding, for instance—are all things computers can be made to do, one way or another, but they drain these actions of their meaning and importance. A computer saying "Good work, you got it just right!" will not *satisfy* me, not for very long. Neither, I think, does anyone

want learners to be satisfied by computer success in that way.

So what do LEAP's proposed changes signal? Pastori continues to see a full role for tutors—doing print-centered work, introducing material from literature and workbooks, reading the newspaper with learners, and recording language-experience stories as the basis for studying reading, rhymes, spelling and such. And, at the moment, the implementation of volunteer aides for computer-users is on hold until Lisa Vance can be hired to organize other activities for the volunteers to do when traffic at the learning center is slow. But if funding for Vance's staff position is approved, the cataloguing, template-building, and other projects geared toward creating a volunteer staff for the center will continue. It will then be easier and more comfortable for tutors and learners to work there together, and for learners to use the computers more or less on their own. But the potential strain on either person in the learning pair will be increased by the possible separation of learner-driven work on the computers from tutor-driven work on printed and narrated material.

For tutors who don't want to work with the computers, whatever the reason, it could mean a subtle competition with the center—machines, aides, staff and all. And the tutors may win.

For learners with limited time to study, work with the machines could mean less time with their tutors. For tutors who don't want to work with the computers, whatever the reason, it could mean a subtle competition with the center—machines, aides, staff and all. And the tutors may win.

They may nonetheless feel bad about the competition. With an M.S. degree in education, Gerri Shapiro has worked as a teacher, and in the 1970s started Park School in Oakland, a private school that's still operating. She left these occupations to work in health education in Africa and New Guinea. When she returned, she volunteered at the center, she says, "because I missed the teaching relationship. I get off when that light bulb goes on."

When we meet she hands me a desktop-published handbook she's written, *Computers in the Elementary School: A Practical Guide for Teachers, K-6*. The handbook covers introductory topics, such as diskette handling and introductions to educational software, and also discusses teaching writing via word processing, and programming in the BASIC and Logo languages. I ask her about using the learning center. She says that she and Mack, her learner, "have been in to the center a few times, but he does fine without it."

But he liked using the computer, she says, "it's an image thing, something that an educated man would use. And there's all the power in that little box." She offers reasons as to why they haven't been back more often, focusing occasionally on Mack ("He's not quite ready yet, to work there independently, we haven't used enough programs"), but generally she shifts between the limitations of computers and the strengths of, as she says rightly, "the creative teacher."

"Inevitably there's a glitch somewhere," she says. "When we came in here, and something went wrong, most of the time the solutions were quite technical. I just want it to work like my VCR, and computers aren't at that stage."

Shapiro has more sophisticated complaints as well. "The computer is limited to the task at hand, unless the creative teacher uses it to make something wonderful," she says. "At the learning center we were limited in the amount of progress we made because I could switch gears but the computer couldn't."

After the first flush of infatuation with print-outs or graphics or telecommunications, most of us are happiest when the technology disappears, when it becomes a transparent link to our task. Teachers, and volunteer tutors, are no different. Shapiro's blackboard and

Shapiro's blackboard and chalk are transparent teaching technology for her. With them, she says, "we can respond instantly to what he wants."

chalk are transparent teaching technology for her. With them, she says, "we can respond instantly to what he wants. We just fly on a one-to-one relationship." Together they work on material related to Mack's rock band, or his job with Roto-Rooter, or on writing checks and banking and whatever is important at the moment. Clearly, Shapiro improvises the kind of learner-centered teaching that is the cornerstone of the LEAP program.

But when they're working with computers, she and Mack aren't in what she calls "the comfort zone." Nor does she think that independent computer work for Mack, a possibility in LEAP's model for the future, would necessarily be helpful; she would need to preview videos and make lesson plans to be sure *his* work connected with *their* work. Many of the pages in her handbook carry a kind of Teacher General's warning, in capital letters: "Whether or not these important skills will transfer from a computer program to other areas of the curriculum depends primarily on input and support from the classroom teacher."

When Shapiro and I finish talking, as I walk her to the door, she says, "It's my fault, really, that we don't come in here

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more. I'm to blame." In my mind I agreed with her, and with Susan McCallister. Tutors are the big issue, I thought, and the key issue is power, as in empowerment.

But let's look again. Here's an experienced, eager teacher, working—for free—plumb along the lines the program has embraced, and working with apparent success (she and Mack will have been at it for year when this story goes to press). She is willing and able to provide enough of the structure, which Avis Bateman says is wanting, to satisfy herself at least. And she feels a little guilty. Why? Because the learning center is there, beckoning, and dangling the treat and/or threat of independent work on computers in the future? Because Mack and other learners are turned on by computers?

Ideally, Mack's sessions with her would slide easily through blackboard-and-chalk, computers and programs, videos, the newspaper and what-have-you effortlessly. Integrated teaching technology. That doesn't often happen at LEAP, yet, and I suspect the story's the same for a lot of volunteer literacy programs. The LEAP people are working toward that integration—on behalf of learning pairs like Gerri Shapiro and Mack—with the cataloguing efforts and the volunteer learning center aides. But the managing of independent work, or some other factor, may be mixing an unforeseen backward step into the progressive tango of technology and volunteer tutoring.

Postscript

The first person I met on my visit to LEAP was Jerrie Arko. With little computer experience, and no experience teaching whatsoever, she plows along with her learner. "The greatest joy I have here," she says, "is when I see her face just light up after she reads something—we're reading Maya Angelou now—and she can see that it fits in with her life." I asked Arko about using the computers, whether it bothered her when things didn't work or when she couldn't make the machine behave. Her response? "I just open up the manual and we spend our time reading that. I always tell them, 'See, this is why you want to learn to read.'" ■

...She feels a little guilty. Why? Because the learning center is there, beckoning, and dangling the treat and/or threat of independent work on computers in the future? Because Mack and other learners are turned on by computers?

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Playing to Win

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with the computer involves learning skills of some kind."

Playing to Win's primary mission is to provide computer access and education to East Harlem and the surrounding areas in New York. But in a disadvantaged community, computer instruction may also entail instruction in literacy and other basic skills. Reading, writing and word processing blend on a fundamental level in Stone's program, as she intends them to. She tells the story of a learner and her volunteer tutor, working at a pilot testing site for Playing to Win's *Keystrokes to Literacy* project: their schedules rarely coincided, so the tutor would leave a template of questions for the learner, as a datafile, which the learner answered on her next visit. The student, normally shy, found a way in the computer to tell of anxieties and incidents in her life that she would never have spoken of face-to-face. Her answers grew in both volume and sophistication, and the process enriched their relationship, as well as her literacy skills.

Keystrokes to Literacy is a series of templates for computer activities. The templates are designed to introduce computer keyboard, word processing, database and spreadsheet skills, while at the same time engaging learners in cloze-like exercises, word recognition, spelling or math operations *(see figure A, this page)* In Stone's view, "the interesting thing is that the users may start with the activities, and then they may go on to writing, and then they may come back to a template in order to reinforce a particular computer skill, such as search and replace, or cutting and pasting." The template activities are not themselves a literacy curriculum; they provide a store of resources integrating literacy skills and computer use.

Now in its third year of development, *Keystrokes to Literacy* will be published as a book (Stone is currently negotiating with a book publisher), making the templates usable on any microcomputer with tool application software. The word processing section begins with simple computer skills—entering characters, erasing, moving around—and progresses through to sentence completion and pre-writing activities for life-experience stories. Activities that require greater reading and writing skill of the learner depend on designs that are personalized by a tutor or teacher *(as in figure B, page 14)*.

The *Keystrokes to Literacy* Project and

File Edit Search Format Font Document Window
Del.blks.Food
Erase what I don't eat:
I like to eat I eat cake and milk and cars and trucks and peanuts
I eat breakfast and stars and flags and lunch and dinner
Erase the x's to find out what I do eat:
eggxxxapplexxxxcakexxxxfishxxxxxmilkxxxpiexxxxgrapesxx
xxxchickenxxxxhamburgersxxxxxcookiesxxxxsalsaxxxtoastx
NAME:
DATE:
Page 1

Figure A—Reading and deleting exercise

> ***"They don't know what's out there, they've lost awareness of their ability to discover worlds."***

Playing to Win as a whole are both grounded in a desire to enrich learning through the use of computers, and in the belief that enrichment will lead to accomplishment. Individuals, who become members at the center for a $10 fee, paying $.75 per hour of computer use, generally visit the center to use tool software—for the most part word processing, spreadsheet and database applications. For Stone, any element of computing could ignite a student's urge to learn. "I'd like to have an example of everything that computers can do," she says. "I'd like to have a robot on the floor, CAD stuff (Computer-Aided Design), plotters—you never know what's going to spark the imagination of a kid or an adult whose been turned off by education.

"They don't know what's out there, they've lost awareness of their ability to discover worlds."

Learner independence

Members come to the center to do whatever they want—to learn about computers, to do their homework (60 percent of the visits to the center are by people under 18), to write letters, draw pictures or compose music. And to learn literacy skills, even though Playing to Win isn't, strictly speaking, a literacy project. If someone asks specifically for literacy instruction, Stone suggests that they join Playing to Win and also refers them to instructional programs in the area, "particularly ones that use computers."

On the other hand, when people join the project saying that they want to learn word processing, "our staff answer

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File Edit Search Format Font Document Window
MOVE.Road Stop
ROAD STOP
Use Cut and Paste to arrange these sentences in proper order.
She put the spare tire on. She took off the flat tire. She stopped the car. Michelle thought that she had a flat tire. She opened the trunk and got her spare tire. She put the flat tire in the trunk. Michelle drove away. She closed the trunk.
NAME:
DATE:
Page 1

Figure B—Exercise in reading and thinking, cutting and pasting

Playing to win

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to that is to ask, 'What do you want to write,' and if they don't know right away we say, 'Well you must have something to say about something, write down why you want to learn to use a word processor.' And eventually they come up with something." Emphasis at the center is placed on using the computers to do something, rather than on learning mechanical skills, although Playing to Win offers a variety of educational software in addition to the tool applications that are the major focus.

"If somebody wants to drill," Stone says, "because they recognize that they need to drill something, that's fine. But they've got to realize that drill is just, one of the things a computer can do for them."

Learning word processing and writing, at Playing to Win, can easily lead to telecommunicating. As a teaching tool, in Stone's opinion, electronic-mail is one more way that the microcomputer transforms writing from an abstract exercise to a way of doing something, of communicating: "Computers gave me a new concept, which is that you're writing for an audience, for a group of people, and that's a strange concept when you learn to write in school.

"You write *to* someone, instead of just for a teacher. Telecommunications allows learners to send messages to people they've never met, and they don't know if these people are across the city or in San Diego. And when someone writes back 'I don't understand what you mean at all, why don't you use periods?' suddenly they get the point to using punctuation." The point, more generally, is that computer users become indistinguishable from learners, and that the users/learners will 'discover worlds' if they're simply given tools to explore for themselves.

Of teachers and volunteers

Teaching requirements, then, vary greatly with the needs of the members. The center's teachers, two of whom are always on duty during the 10 hours the center is open, may introduce elementary computer techniques and a variety of templates at a beginning small-group session, but from then on, center members learn at their own pace and under their own direction. "The teachers are there to do one-on-one tutoring when it's needed," Stone says, "but there may be 20 to 30 people all working on different things." With everyone working independently, a teacher may still be able to work one-on-one with a member for a half-hour or more.

The center is also used by five Adult Basic Education (ABE) classes and several other community organizations. Playing to Win staff work with these classes in a variety of roles according to the goals of the class and the teacher's computer expertise. Peter Elarde, one of the center's full-time teachers, describes a frequent team-teaching situation, in which "the ABE teacher handles the literacy part of it, and our teacher handles the computer end of it."

"Sometimes," Stone says, "a teacher who is experienced may use the center as a computer lab, sometimes a teacher comes, says I don't know anything about this stuff, and asks that someone on our staff handle the class." For the last four years, Playing to Win teachers have been augmented by teams from New York's City Volunteer Corps (CYC), which schedules volunteers between the ages of 16 and 21 to assist users at the computers. The CYC teams receive two full-time weeks of training, followed by roughly 10 weeks of work at the center. "They help when somebody has busted out of a program," Stone says, "or when they can't read a menu."

"Computers gave me a new concept, which is that you're writing for an audience, for a group of people, and that's a strange concept when you learn to write in school."

Other volunteers at the center fill a variety of clerical and teaching functions: they may tutor individuals, or teach small computer-skills classes, or handle cataloguing and documentation tasks. "One woman helps with fundraising," Stone says, "because we are

completely dependent on donations, and one woman straightens the library."

The Fundamental Comparison

The Playing to Win Computer Center handles roughly 500 members' visits per week, provides computer access to ABE classes and other groups, is completing the *Keystrokes* project, and for the last year has staffed a duplicate of their center in Somerville, Massachusetts, outside of Boston. Stone promises that "when that project makes it on its own through this year, then I'll really tell the world, because if we can do it, and they can do it in Massachusetts, then anybody can."

Does Playing to Win glide past hurdles where the LEAP project struggles? Yes and no. The center and its projects have gained a sort of momentum—the computers are apparently hot with use—and it has gained it under the rubric of empowerment and personalized learning that LEAP espouses as well. But Playing to Win fills a different niche in a more complex environment: in New York City, a community infrastructure of public-housing support services, literacy projects, and ABE classes brings tutors and teachers, curricula, and even project members into the center. Even underfunded and inadequate—in fact, especially because of those very circumstances—that infrastructure and the sheer crowding of people into the community creates a need that fuels Playing to Win.

"Most of our members," says Stone, "live within a 15-block radius of Playing to Win."

There is need in Richmond, California—a city of 80,000 people, with a minority population of roughly 60 percent and a relatively high unemployment rate (6.1 percent compared to the 5 percent national average)—but the community is less compressed and the city's infrastructure of social services is under less pressure. Where Playing to Win's role is expansive and interactive, the Richmond LEAP Project must be intensive, reaching individual adult learners with supportive instruction and

Stone promises that "when that project makes it on its own through this year, then I'll really tell the world, because if we can do it, and they can do it in Massachusetts, then anybody can."

progressive curriculum. Although LEAP acknowledges the diversity of its learners, and they are diverse, one fact unites them—they all need to learn to read and write at a basic level. LEAP meets that need head-on in a way that Playing to Win cannot.

Comparisons *are* fundamental In this case, a comparison enables us to see both programs—and their responses to curriculum development, volunteer training and learners' needs—more clearly and from a developed perspective. From this vantage Playing to Win, examined less deeply in this issue than Richmond LEAP, successfully integrates computer access and education with the needs of its community and of existing literacy organizations. It isn't, and can't be, an answer to the dilemmas confronting volunteer programs integrating computer use with one-on-one instruction. ■

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Editorial

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Mr. Duffy and ABC contributed more to the conference than their competitors, and are to be thanked. Their commitment to adult literacy seems honest and heart-felt.

But the people who had the most to say, to me at least, were the literacy practitioners who presented their work, methods and products, practitioners who came hoping to learn from the presentations, and the people who staffed the vendor booths. These last included Jack Fenimore, of MidCom Systems, who seemed to know everybody, even me. Jack argued, persuasively, that the conference, the AL&T Project, and almost every educator on the planet is entranced by computers which are a costly means of reaching a limited number of learners. Why not video? he asked anyone who passed by, with video you can reach bunches of people at a time, over and over again.

Michael Hanish, who runs a small literacy program in Brattleboro, Vermont, got buttonholed by Jack, then buttonholed him right back. Mike, it turns out, uses a video camcorder, a few of his friends, and an Amiga computer as an editing station to turn out his own literacy videotapes, which learners in his program can take home to watch. "My students all have VCRs at home," he told me. "They can run these tapes in the kitchen, or while they're doing something else, just the way they run the TV. Hell, they all had VCRs before I did." Getting buttonholed by these two experts, I saw video clips on dividing a pizza, and on a variety of key words, sort of like "Sesame Street" for adults.

I was struck, there and throughout the conference, by how much people had accomplished with the most slender means.

Most of my time was spent staffing the AL&T booth, never buttonholing—no not me—but waiting politely for passersby to inquire about AL&T products—the newsletter, the software guide, the video series and the next conference. I did sneak out to catch Marti Lane's presentation on implementing videos in ESL workshops, in which she deployed demonstration-tutors to teach mini-lessons on geography, money, the flag and so on, all tied to the main lesson's central concept.

At another session Richard Sparks and Steve Millward, of Pocatello, Idaho, demonstrated their HyperCard ESL stack, using voice synthesis and scanned-in graphics to cover spelling, meaning and pronunciation of about 75 words. I was struck, there and throughout the conference, by how much people had accomplished with the most slender means. Chuck Barger, who with Tim Songer is developing a literacy program for the Mac, described how he often hid their single hard disk in a drawer at night because the program had grown beyond his back-up capability, and he was afraid someone would steal the thing, or use it. Understandably a Mac SE, donated by Apple to be raffled at the conference, grew into a conversation topic of monstrous proportion.

Although I never quite understood why Tim and Chuck hid their hard disk, I've been told that their READY Course, developed for the Central Piedmont Community College in Charlotte, North Carolina, is sensational—imaginative, witty, and sensitive to the strengths as well as the needs of adult learners. I never saw the thing, however, being chained to my booth. But one component, I've heard, is called "Talking Elvis," which makes me think that there must be something there that I can learn—how to say "hound dog," perhaps? When I met Tim and Chuck, after some small build-up, I only heard about clouds of fireflies rising out of fields, and how Chuck always entertains at home in his skivvies, with his guests following suit, as it were.

I read in a trade magazine after I got back home that the AL&T Louisville affair turned into an unusually productive conference for the vendor representatives involved, several of whom reported making sales on the first day. The message that software developers and publishers should find in this fact is that the adult education market is already established, with regard to the need and ability to purchase products, and lacks only products specifically targeted to adults.

The adult education market is already established, with regard to the need and ability to purchase products, and lacks only products specifically targeted to adults.

Manning my booth reaffirmed my respect for the vendor reps, who fill a singular and not always central niche in conference proceedings. They nonetheless remain upbeat, informed, and interested in everyone's opinions of their wares long after I've started to wander around in my socks like a zombie. Albert Siegfried, of BLS Tutorsystems in Wilmington, Delaware, has found a special satisfaction at these conferences. Already once-retired, he opened a literacy workshop with his wife a few years ago. The workshop has added a publishing concern and his son has taken over the day-to-day operations, allowing Siegfried to travel to conferences, meeting people and talking about his materials. Consider this an endorsement of the man, as I'm unable to judge the products.

For me—and I'm sure I risk sounding patronizing—these vendor reps tie us to the earliest days of America's mercantile success: 100 years ago, as transportation

networks and production techniques evolved, manufacturers could stretch the market for their goods across the country. Now, as 'communication' supplants transportation and information displaces 'things', these travelers are vestiges, holdovers, die-hards—people who really have to *be* there, with their products, to make a buck and a living.

Apple Computer was there, in a way, twisting somewhat my picture of the word 'booth.' Into something bigger, like *Booooooth*. With carpeted walls, spotlights, and a separate HyperCard lab, their establishment outdid my hotel room. And it was better equipped. And filled with nicer and better-looking people. Not that I ever went inside—terribly busy hawking newsletters and all that—but it looked great and people flocked to go in.

No, I stayed in my little AL&T booth, bereft of amenities except for a plastic chair, which was never amenable for more than five minutes. Cheryl Zaccardi, in the booth-with-chair next door, seemed better able to cope than I was. Cheryl is coordinating, with Teri Turner, the 1990 AL&T conference in St. Paul, Minnesota. So she'd better be able to cope. Be there.

With the above casual reference to Teri Turner, I would like to welcome her to these pages as a regular columnist. I'm sure her provocative and visionary approach to the fusion of literacy education and technology will get you thinking in new ways. She is as busy as can be, and we greatly appreciate the extra effort she is making to give us her perspective.

You may note that I've written a disproportionate number of articles in this issue. Would that this weren't true. I pondered giving the bylines to other people in my office, and making up a fictional staff writer to welcome along with Teri Turner, but I realized that the best trick, as usual, is honesty. This newsletter is, or should be, a vehicle for *your* opinions, not only mine, and for your news. If you have an idea for a story—about learning disabilities, computer viruses, Commodore computers, or Mr. Bush's drug and education plans—don't be bashful, contact me for hints or just go ahead and write. If you don't have an idea, think of one.

Because, of course, I wrote so much of this issue, and for other reasons as well, I hope you enjoy your reading.

Ed Gueble, Editor

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Technology Consultants
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The Technology Consultants in the Adult Literacy & Technology Project have been active for the last three years, providing assistance to hundreds of literacy practitioners on a wide range of questions such as how to begin using technology, how to select software and hardware and how to find software for special-need learners. Requests for information have come from practitioners at many kinds of agencies: ABE, Laubach, LVA, universities, government, business, labor, community colleges and corrections.

The TCs, chosen for their literacy-related technological expertise, are 'on-call' for free or low-cost consultation, and for presentations at conferences. Please keep this list for reference.

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The Adult Literacy & Technology Newsletter

Fall Issue 1989

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Computers and Learner Independence

The 1989 AL&T Conference in Louisville

Teri Turner on Envisioning the Future

Reviews of Two Programs for ESL Students

Technology Transfer

and more . . .

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Adult Literacy & Technology Newsletter

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Research Review:

Word Processing and Writing

Part One: The Writing Process

Jane Laidley has graciously made available to us her review of data and theories on the effective use of word processing in the teaching of writing. In order to keep the information useful to others proposing research or requesting funding for acquisitions, we have preserved her bibliographical references (her sources appear at the article's end). Both author and editor apologize for the encumbered style which is the result, especially in light of the article's epigraph:

> **True ease in writing comes from art, not chance,**
> **As those move easiest who have learned to dance...**

We do all of our thinking with language. However, "words, they say, are a comparatively recent invention, for the fuller expression of something that was already in existence." (Black, 1969:15) The language of thought includes images, feelings, intuition—even sounds. "Experience comes first and language enters in with the problem of choosing memorable ways of saying what one already knows or means." (Jarrett, 1981:20) Learning language, then, spans the entire classroom curriculum, and "takes place as we use language to learn about our world, to give our daily experiences a defining shape, a sensible interpretation." (Dyson & Genishi,1983:751) Language learning requires an integration of four elements—listening, speaking, reading, writing. Based on the successful scaffolding of the other three elements, writing is clearly the most difficult skill, demanding that one push thought and meaning to a concrete form. While investigating the effect of word processing on the learning of writing skills, I have surveyed existing opinions and research on the writing process, on the instructional uses of computers and word processing, and on the editing and revision stages of the writing process. The bulk of available work considers young students, but it is in my opinion pertinent as well to the teaching of adult learners on almost any level of language proficiency.

"Writing is thinking," Walter Loban states, (undated) implying that successful

"Based on the successful scaffolding of the other three elements, writing is clearly the most difficult skill, demanding that one push thought and meaning to a concrete form."

writing skills both depend on and stimulate successful problem-solving and other cognitive skills. Writing via word processors constitutes 44 percent of computer use in schools, (Rockman, 1986) so we can presume that a fair amount of computer-assisted 'thinking' is taking place. And in the field of adult literacy, computer-assisted instruction is becoming increasingly widespread. Adult learners may have relatively well-developed cognitive and life skills, and simply lack the skills of literacy the wide range of skills necessary for full membership in their culture. Certainly, word processing and computer use in general

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In My Opinion

You Are What You Speak: Language, Teaching and Technology

by Terilyn C. Turner

One of the most violent arguments I've ever witnessed occurred at a conference in Washington D.C., at a session entitled "The Definition of Literacy." Although creating definitions might seem to be an intrinsically boring enterprise, in this case it resulted in one participant asking the other to step outside to 'settle' the debate! What was at stake, if I can take the liberty of straining the content out of their intense emotions, was the question of who has the right to define literacy, and for whom. Should it be the teacher, the

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Images of the Future

The future of adult literacy education—the boundaries of possibility, preparing for the probabilities

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For registration, contact: Cheryl Zaccardi, 740 York Avenue, St. Paul, MN 55106
1-612/290-8330

Time to Think...

There's never been a time, perhaps, when the pressure to act *didn't* have been pumped up high by the storm of events. And by the piling of those events—the words and images that relay news to us are contradictory, exclusive, counterinvalidated, and the only choices we have. Sometimes we feel as though we're drowning in news, in bizarre events and in rewards of 'the facts' about our borders, and in the changing guidelines for our lives. And at the same time, information about our finances, buying habits, affiliations and actions has never been more accessible to businesses, the government and who knows who-all. There is too much information; there will be more information still in years to come. There's never been a time, perhaps, when the ability to read and think has been more important.

In this issue, articles by Jane Laidley and Tori Turner link literacy education to the thinking skills of learners and teachers respectively. Whenever you teach, you teach about the nature of the world and your students' links to it. You know this. The inadequacy of rote learning, and rote teaching, and rote *living* may be clear to us, but we often lack, or think we lack, the means of transforming ourselves and others. It is a question of will. And information. I hope these articles inform you and inspire you.

Onward to the millennium,

Ed Gamble, Editor

Newsbriefs

Judy Koloski, President of the **American Association for Adult and Continuing Education,** asks that everyone concerned with literacy issues urge their senators and congresspersons to sign on as co-sponsors of the bills S 1310, sponsored by Senator Simon, and HR 3123, sponsored by Congressman Sawyer. These bills, based on the Jump Start recommendations, request: creation of a national center for literacy; creation of a cabinet-level council on adult literacy; creation of the position of Assistant Secretary for Adult Basic Skills in the Department of Education; the doubling of funding for the Adult Education Act; more funding for ESL, workplace and intergenerational literacy programs; federal coordination of the JTPA, welfare reform, vocational education and adult education; teacher- and tutor-training incentives; creation of regional literacy resource centers; incentives for the use of technology. Please contact your federal legislatures and their staffs right away.

AAACE is also conducting a Legislative and Leadership Seminar, March 18-21, in Washington, D.C. For information and reservations write AAACE at 112 Sixteenth Street, NW, Suite 420, Washington, DC 20036, or phone 1-202/463-6333.

The 1990 Adult Literacy & Technology Conference, to be held July 18-21 in St. Paul, Minn., has issued a Call for Articles on its theme, "Images of the Future," and the six conferences strands. Contact Cheryl Zaccardi, 740 York Ave., St. Paul, MN 55106, 1-612/290-8330.

The Center for Applied Linguistics now operates the **National Clearinghouse on Literacy Education**, an Adjunct ERIC Clearinghouse, providing information, materials, and technical assistance on literacy education for limited-English-proficient adults and out-of-school youth. Contact the NCLE at 1188 22nd Street N.W., Washington, D.C. 20037; 1-202/429-9292; Fax: 1-202/429-9766.

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Thinking the Unthinkable: Protection from Computer Viruses

by Tom Pier

All computer viruses can be prevented. But it may be counterproductive for an adult literacy professional to operate his or her computer system in a manner that would prevent infection by a virus. Moreover, and contrary to popular belief, viruses are not fatal to a computer system if a few simple guidelines are followed. Sound practice and a basic understanding of how computer viruses work will allow adult literacy professionals to operate learning systems that are both safe and pleasant for their end users.

A computer virus is simply a computer program that performs some undesired task on a computer system. The most "popular" viruses destroy data files, or corrupt system files so that the system will not operate correctly—the printer may not work, or there may be frequent system errors, or certain applications may not open at all. In addition, each virus contains a special set of instructions that makes the infected file pass a copy of the virus program to any system with which the file comes in contact. No one wants a computer virus in their computer system, obviously, so the computer virus is either tagged onto a system file, where it may go unnoticed, or more commonly, it's simply made invisible to the general computer operator. Many times, the person importing the infecting agent is completely unaware of the harm that he or she is doing.

The most vulnerable systems are those using or sharing a hard disk, connected in a Local Area Network, or used in telecommunications. This is because computers contract viruses on floppy disks and via modem transmissions that contain application or system software. computer games, available for free or as shareware on a variety of networks, have been a major source of virus infections. Data files—word processing documents, database information or graphics files, for instance—cannot be sources of infection.

> *"If you are not backing up your data on a regular basis, start doing so immediately."*

With increases in the use of networked configurations and telecommunications in literacy education, transmission of viruses will become more common. It is very important to realize that due to the method of transmission and the nature of many adult literacy programs, you may not be able to stop viruses from entering your system. Although computer programs are available that monitor the arrival of viruses and try to stop them from acting, these programs generally search only for known viruses. On this account, they require periodic upgrades, which can become very expensive, and even then, they cannot guarantee to stop the transmission of new viruses.* It is quite possible that even if you were to check each disk every time it were used in your computers you would still end up with an infection. Systems operators cannot afford to consider virus infections unthinkable.

In order, then, to make the computer system able to withstand the effects of a virus, there are a few simple things that the system operator should do. The first is to make sure that the computer files are completely and regularly backed up onto floppy disks. When you've made sure that a copy of every file is available, your expensive programs and important data have been saved from *any* computer virus in the easiest way possible. Back up your data every day. This way if a computer virus should infect your system, you will lose no more than one day's data. Backing up can be done using one of the many programs available commercially, or if you're using an MS-DOS-compatible computer, such as an IBM PC, by using the backup command included in the system. If you are not backing up your data on a regular basis, start doing so immediately.

Initially, make a backup of every file on your computer, then each day use your backup utility to back up every file that's been modified that day. Do not try to do your backup simply by copying files manually; by using a backup utility you also get copies of invisible files.

An invisible file is simply a file that is not viewable in the normal directory screen. Every operating system has a method for making files invisible. Usually the invisible option is employed automatically, to hide utility files that are used only by a program and not by the user. Such files include user-defined preferences for word processing programs or format files for spreadsheet programs. Computer viruses take advantage of the existence of this file type to hide their presence from the computer user.

To diagnose problems in hidden files, use a utility program, such as Norton's Utilities, that allows you to check for the existence and nature of invisible files. Using the utility program, make a

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* Public domain anti-viral software is available. Send a blank disk and a self-addressed stamped ($.65) disk mailer to the Center for Nonprofit Management, 315 West 9th Street, no. 1100, Los Angeles, CA 90015. Attention: CHIP/VIRUS. Call (213/624-7080 for information.

Confessions of a Software Designer: How I Look at the Market

by Larry Stafan

After considerable time teaching, I've spent quite a lot of the last year and a half developing educational software, gaining insight into the effect of market considerations on the design process. Much of this knowledge was new to me, and may be of use to literacy practitioners and would-be software developers alike.

The software I've designed combines digitized images and digitized sound, via HyperCard, into instructional stackware packages. ('Stackware' is any set of information and the links between information in HyperCard; the information is arranged on 'cards' which in turn come in 'stacks'.) I've been teaching ESL for ten years. In 1984 in Saudi Arabia, where I taught English-for-Special-Purposes (ESP), I had my first contact with Macintosh microcomputers, the primary vehicle for HyperCard. I bought a Mac early on, to produce educational materials on my own - and the move to programming in HyperCard felt natural. When I aimed my designs at wider distribution and sale, however, I was out of my element; having been 'sensitized' in the '60s, I found it hard to understand that my work aimed at anything so crass as a *market*.

Since then I've spoken at four or five conferences. Because my work falls into the category of hypermedia, it has been covered in national publications—*ComputerLand Magazine*, *The Athelstan Newsletter*, and *CALI Digest*—and I've even received a couple of minutes on the network television show, *Computer Chronicles*. I've gained credibility from this exposure, but I've also learned that people expect me to represent my work on ESL, mathematics and literacy as addressing a market—they're not interested in my hazy assumptions about computer-assisted instruction. Understanding the market—that is, identifying the needs of the people who might buy my work—has moved into my category of 'first things'.

> ***"I...need to contact and satisfy the demands of the people who run ESL and literacy centers, who are not the end users. The ESL and literacy software markets are composed of middlepersons."***

The end users in a literacy program will not buy my software. Although I design the program for these people to use, they probably don't have a computer at home, they don't buy software, and there's no reason for me to bother them with sales information. So, although I may be altruistic, and may have high hopes for those who cannot read, I really need to contact and satisfy the demands of the people who run ESL and literacy centers, who are not the end users. The ESL and literacy software markets are composed of *middlepersons*.

The effect on the number of potential buyers is clear: there are perhaps 30 million illiterate people in the United States, but my software is only purchased by literacy or ESL programs, *and then* only by programs with Macintoshes, *and then* only by programs with administrators interested in what I have to offer. There is always someone interpreting my work's apparent usefulness for its end users. If this person is computer literate and familiar with the needs of students, my programs will at least be judged fairly, and purchased if they're found suitable. But if the potential buyer feels threatened by computers, is trying to hide his or her lack of computer skills, doesn't know the subject well, or just can't see how my work could apply to students in the program, then my software won't get into the hands of the people who could benefit. Neither my altruistic motives nor my ideas about computers in education can break through any of these barriers. Recently, I've been working with local literacy programs to come to a better understanding of the needs of the end user, and also of the middlepersons who'll be doing the buying.

In the course of conferences and sales meetings, I've also begun demonstrating my products to educators—the results of some early demonstrations have kept me from squandering time developing products that no one would ever use. In one case, I had put in a fair amount of preliminary work on a cardstack addressing syllabic stress and intonation. I thought this would be a natural follow-up to my program, *Accent Improvement*, which is based on discriminating 'minimal pairs', such as "steel" vs. "still." When I showed my preliminary stackware at a state conference I discovered that most ESL Instructors don't know very much about English speech patterns or, at the least, they weren't sure what stress and intonation were, or how important mastering them would be for their students. So, even though I had used the prototype successfully with foreign-born students, I abandoned the project, because I knew that it would never appeal to the people who make the purchasing decisions, the people who make up my market.

The result of demonstrations may not always be quite so cut and dried: I've taught a great deal of reading, and believe that I know how to successfully match reading skills with computer-based instruction. At one point, after-

...on page 13

Local Link-Ups: Is Networking in Your Future?

By John Fleischman

Development of computer networks has become an area of special interest for many adult educators. As the field evolves, literacy providers using computers are beginning to recognize the potential benefits of networks for both instruction and management. But is the effort and expense really worthwhile given the current state and cost of the technology? The answer to this question isn't cut and dried, but there is little doubt that the days of stand-alone computers are drawing to a close.

Local area networks (LANs—which connect microcomputers to each other) and integrated learning systems (linking sets of monitors and keyboards to one mini- or mainframe computer) are the fastest growing uses of computer learning programs designed for adult students. In a study conducted by Electronic Learning, 80 percent of the nation's largest school districts indicated that they plan to use computers purchased in 1988/89 in a networked environment. A study conducted by Micro Methods, a Berkeley, Calif., consulting firm, discovered that more than 60 percent of new systems installed for adult education and "at-risk" youth programs are networked systems. Most of these acquisitions are integrated learning systems, which offer management and recordkeeping capabilities, as well as an extensive predetermined curriculum. The same features are available for microcomputers connected via LANs, although these configurations aren't usually sold as packages. *(See "Five Big Systems and One Little Option," in our Spring, 1989, issue–Editor.)*

"More than 60 percent of new systems installed for adult education and 'at-risk' youth programs are networked systems."

What is a LAN?

A local area network is essentially a communications network, connecting a number of computer devices. The most common LAN involves a number of microcomputers wired to one microcomputer that has a large hard-disk memory capacity. Usually, there are an assortment of additional electronic devices connected to this system including printers, CD ROM drives and modems, which all the various stations on the LAN can access. Small and midsize businesses use configurations of this type to increase the productivity of their office.

Although LAN configurations vary widely, the network file server is always an integral part. The file server acts as the central brain, serving (ergo file *server*) each of the micros connected to it, allowing data to be shared by all of the microcomputers in the system. Like a traffic cop or signal light, the file server directs and monitors the flow of information to and from other computers in the network.

Most computers have the ability to be networked: IBMs and their compatibles, Macintoshes, Apple IIs, Tandys and Commodores all commonly appear in networks. Some of these machines have a built-in networking capability: Macintoshes simply get "plugged-in" to the network via their serial ports. Other computers like the Apple IIe and IBM PC require networking cards, special pieces of hardware that are installed in the computer to allow it to "talk" to the file server.

Critical to every LAN is the network operating-system software, which tells the file server what to do and allows each node in the network to speak to the file server. Novell, Corvus, Apple, DigiCard, Farallones and 3-COM, to mention just a few, produce very popular software packages.

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Wee Pals © Morrie Turner
THIS IS DICK'S DOG SPOT- DICK THROWS THE BALL! SEE SPOT RUN AFTER THE BALL
I FINALLY LEARN TO READ...
...AND I GET A BOOK WITH A DUMB PLOT LIKE THIS!
MORRIE
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Networking

cont'd from page 5

The next level of software, vital to instruction-based LANs, is the management-system software, which creates a bridge between packages of instructional software (in other words the curriculum) and the network operating-system software. Management system software typically includes many of the recordkeeping features—class rosters, schedules, grade books, and so on—that help an instructional LAN increase the power and value of microcomputers as they're used in education.

Instructional software applications are, of course, the core of the networked instructional system. Several years ago a lack of "networkable" instructional applications meant that networks provided few advantages to teachers and students. Today most educational software companies have made their software network-compatible. Popular adult education software packages, such as those produced by Davidson and Educational Activities, now have networkable versions for most of their programs.

What are the Advantages?

Most adult educators using networks indicated clear advantages over stand-alones, with the most immediate practical advantage being the elimination of floppy disk handling. For LAN-using teachers the "floppy nightmare" is a thing of the past; no more special instructions to students for disk-handling procedures. No more "can't read" or "do you want to initialize?" messages. No more money spent to purchase multiple copies, and/or no more strong pressure for illegal duplication of publishers' materials.

Another distinct advantage lies in the detailed reports and printouts of time spent on-task which the software management programs make available to teachers, allowing them to place students in specific study components of the courseware. For programs that operate under "soft" funding and need to provide detailed reporting of student progress, the management features of networked systems become especially attractive.

With their microcomputers connected in a LAN, several learners can use one program at the same time without duplicating it. Also, students can share work between different nodes on the LAN, allowing collaboration, comments on drafts, and communication via electronic mail. Students can work together on separate computers on various parts of a solution and then pool their data to arrive at possible outcomes.

What are the Disadvantages?

Probably the greatest obstacle to setting up an instructional LAN is cost. Adult education and literacy projects—and there are many of them that can barely afford several stand-alones—are in no position to think about building a network. The initial investment in networking hardware and software can add up to $1,000 per computer. The hard disk needed to function as the file server

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"The 'floppy nightmare' is a thing of the past... No more 'can't read' or 'do you want to initialize?' messages."

must have adequate capacity. Agencies purchasing smaller hard drives, in the 20-megabyte range, for their file server, find that their needs quickly outgrow the drive's limited capacity. Cables and other hardware must be installed properly to prevent malfunctions or accidental damage.

The most important caveat, however, is the staff time that must be invested in acquiring, installing, learning and managing the system. In addition, any networked system requires a network administrator, an individual willing to take the time to become knowledgeable about hard-disk management, and to perform 'housecleaning' and other tasks related to the system's upkeep. *(See "Thinking the Unthinkable," on page 3 of this issue—Editor.)* This person must have a good working knowledge of both hardware setup and software applications used on the network, and be responsible for establishing backup and security procedures.

What Should I Consider Before Buying?

Of course, educators investigating networks should examine their needs: What do the students need to learn? Is the appropriate software available and networkable? Do I want to build my own "open architecture" system, or is an integrated learning system more appropriate? Will I be using a variety of different computers? What will be the physical environment? What about the security of hardware and data?

If you're now using computer software on stand-alones, first check the availability of that same software in networkable versions. Verify which networks that the software will operate on, being sure that you have satisfied questions about operating system versions, RAM requirements and similar fine points. If you plan to integrate different types of computers—often the case in literacy computer labs—compatibility will be still more challenging because each type of computer uses its own operating system.

Other issues also come into play. Placing the computers far apart, for instance, can affect the network's efficiency. Security is also critical, not only for hardware, but for software and data as well. We all know that hard drives do fail. How will you back up student information? Floppy-disk backup systems are cumbersome and time consuming, and tape-drive backup systems are expensive.

Picking a System

There is no best or "right" system. Optimal network solutions are based first on the needs of students and second on the funding available. Keep a clear purpose in mind as you explore various systems. Be sure to plan on plenty of in-service time and insist on solid vendor support. Talk to network users with similar requirements.

In a variety of ways, networks help us connect learners to ever greater amounts of information. Shared CD ROM drives allow students access to graphic encyclopedias and entire libraries. Shared modems allow students to connect to on-line databases and other learning groups, linking them to virtually limitless amounts of information and avenues of communication. Networked computer labs help students connect with their teachers and with each other. Ultimately, networks connect students and their microcomputer tools to the outside world.

John Fleischman is Director of Corrections Education for the Hacienda La Puente Unified School District, and Chairman of the AL&T Steering Committee. He can be reached at: Hacienda La Puente USD, 211 W. Temple, Rm 808, Los Angeles, CA 90012.

The Adult Literacy and Technology Project appreciates the gracious and consistent support of the **Gannett Foundation.**

Laserdiscs: Beginning and Beyond

by Lucy Tribble MacDonald

As an AL&T technology consultant, especially one with a special interest in laserdiscs, I receive many questions from across the country asking for help and information on this topic. The questions come from two quarters: from teachers who are just beginning and want to know where to start, and from those teachers who already have interactive videodisc labs—primarily Principles of Alphabetic Literacy (PALS) labs—but who want to know what other resources are available. The two groups converge because they are both asking for information and resources on laserdiscs for adult literacy. Here are resources for the beginners and additional information for those interested in laserdisc labs 'that are more than just PALS.'

In print materials, there are three major resources. For those who want a one-stop shopping approach to hardware and software—from laserdiscs to CD ROM disks, from HyperCard stacks to authoring systems—the ZTEK catalog offers an overview of educational videodiscs, with detailed descriptions of products and an excellent glossary of terms for the beginner.

Some educators aren't in a position to jump right into a catalog, and would like general information about the subject. *Instructional Delivery Systems Magazine* provides articles for beginners and advanced users alike. The magazine dedicated its September/October, 1989, issue to adult literacy, with special articles on different laserdisc topics, including "Laserdiscs—One solution to the problem of Adult Literacy," and "Experimenting in Business with IVD (Interactive Video Disc)," which addressed interactive video and workplace literacy efforts. A calendar of events is also included, listing conferences and workshops throughout the country.

The third print resource, *The Videodisc Compendium*, lists videodiscs for both education and training. Because adult literacy has so many diverse needs, a comprehensive listing of this sort, drawn from a variety of special fields, is very helpful. Under "Business" in the *Compendium*, we find a listing for "Japanese," with both Japanese and English audio tracks and some language instruction on disk. This disk may be suitable for working with Japanese ESL students. Perhaps the listing under "Language Arts: Skills" called "English

"Questions come from two quarters: from teachers who are just beginning and just want to know where to start, and from those teachers who already have interactive videodisc labs."

LASERDISC PUBLISHER

Laserdiscs	Publisher	Phone
American Sign Language, Videodisc Dictionary	ACCESS Network	1-800/332-8293
Attributes for Successful Employability	Bloomburg University	1-717/389-4806
Bill Cosby's Reading Comprehension	Ambrose Video	
Bill Cosby's Vocabulary	Ambrose Video	
Build	Videodiscovery	
Dress and Grooming	Hal Titen	1-707/463-5253
English for Life and Work	ACCESS Network	1-800/332-8293
Florida JTPA Employability Skills	Florida State University	1-904/487-2054
Interactive Math	Health Edutech, Inc.	1-612/831-0445
Interactive Mathematics	Ferranti Educational Systems, Inc.	1-800/537-7950
Interactive Math/Math	Wisconsin VTAE	1-608/831-6313
Interactive Reading	Health Edutech, Inc.	1-612/831-0445
Principles of Alphabetic Literacy	IBM	1-404/988-2351
Skillpac—English for Industry	Interactive Training Corp.	1-703/824-2048
Teaching English Through Film	EDUDISC	1-615/373-2506
Working With People	Hal Titen	1-707/463-5253

for Life and Work" would also help the ESL students. According to the *Compendium*, this videodisc comes with a student's workbook, a resource book, a language skills book, audio tape, a teacher's guide, two videodiscs and software! *The Videodisc Compendium*, for a cost of $12.50, lists 600 videodiscs from 94 different companies, including the types of computers that run accompanying software and the contact information of the publishing company. Lists of professional organizations and publications are also included.

For programs which already run interactive videodisc labs using IBM InfoWindow and Pioneer 6000 players, quite a lot of software is available for purchase. A series of disks entitled *Employability Skills*, developed in Florida via Job Training and Partnership Act funds, offers excellent materials on job skills and workplace literacy. *Skillpac—English for Industry* provides language training in a workplace context for ESL students. In math, there are several choices: Health Edutech offers *Basic Math* and *Applied Algebra* in two languages, English and Spanish; Ferranti Educational Systems has created life-skills segments which depict consumer situations. In their math series, the Wisconsin Foundation for Vocational, Technical and Adult Education provides individualized competency-based instruction on videodisc. In their reading curriculum, Health Edutech offers a three-part *Interactive Reading Series: Survival Words, Word Parts* and *Comprehension*. Time-Life Video now is publishing *Bill Cosby's Reading Comprehension and Vocabulary* on stand-alone laserdiscs. These easily lend themselves to use in combination, through authoring systems, with lessons and tests. Clearly, there are many choices in several content areas.

"For programs which already run interactive videodisc labs using IBM InfoWindow and Pioneer 6000 players, quite a lot of software is available for purchase."

Whether you are just getting to know laserdiscs, or are ready to move on to a deeper relationship, a wide range of products and resources are available to help you make informed and successful choices.

Resources:

ZTEK
P.O. Box 1968
Lexington, KY 40593
1-800/247-1603

Instructional
Delivery Systems Magazine
50 Culpeper Street
Warrenton, VA 22186
1-703/347-0055

Lucy Tribble MacDonald, an AL&T Technology Consultant, is the Program Chair of Learning Assistance and Skills Development at Chemeketa Community College. She can reached at the college, P.O. Box 14007, Salem, OR 97309, 1-503/399-5093.

LASERDISCS BY COMPUTER

Title	Apple II	IBM	Mac	Stand Alone
[illegible]				
Attributes for Successful Employability				
[illegible]				
Bill Cosby's Vocabulary				
[illegible]				
Dress and Grooming				
[illegible]				
Florida JTPA Employability Skills				
[illegible]				
Interactive Mathematics				
[illegible]				
Interactive Reading				
[illegible]				
Skillpac—English for Industry				
[illegible]				
Working With People				

Language

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government, the employer, the taxpayer, or the student?

To the facile answer—"the student or learner, of course"—any practitioner must oppose the fact that learners often enter programs with limited visions of their own potential ("I want a GED"), or unrealistic expectations ("I want a GED"). Accountability to governing bodies and funding sources adds further complexity. Some practitioners feel a mandate to serve those at the lowest end of the literacy spectrum, while others feel that this is the smallest and least productive group. These last folks believe that attention should be focused on the marginally literate, people who can readily be made productive members of society. Legislation seems to be pushing us in this direction as well, with its renewed emphasis on increasing worker productivity.

The first group, among others, contends that this development will eliminate literacy services for senior citizens,

"For better or worse the choices we make imply our beliefs and values about the learner's goals, as well as the goals of our programs."

homemakers, and others outside the workforce who are most in need.

And what does all of this have to do with technology, anyway? A great deal, I think. Every time we select a piece of software or configure a computer lab we make a statement about our own definition of literacy. For better or worse the choices we make imply our beliefs and values about the learner's goals, as well as the goals of our programs. Too often, I fear, those goals are determined neither by the learners nor the practitioners, but rather by what is available in the marketplace. We are in danger of allowing our definitions of literacy to come from hardware and software vendors.

We spend a lot of time with vendors describing our "target population." I think it 's easier for us to identify who we are trying to serve than what we are trying to accomplish. We can't articulate the goals of our literacy programs without making fundamental assumptions about the definition of literacy, and yet we rarely take time to reflect upon the definitions that we as practitioners subscribe to and wish to implement. We need to use these ideas to challenge vendors on their underlying assumptions, assumptions inherent in the design of software, other technologies, product lines and marketing strategies.

For example, we should ask what definition of literacy is implicit in a given computer curriculum design? Does the program assume learners will have the same interests as high school students? Does it assume that learning the disciplines of English and mathematics is linear and sequential? And most importantly, are those assumptions and definitions congruent with yours and those of your learners?

Language frames our world—our choice of words is not to be taken lightly. And loaded language abounds in the literacy field. "Dropout," "remedial," and "illiterate" all carry negative connotations that we "fight" in the "battle against illiteracy!" Not much better is the need to "diagnose," "prescribe," and "cure illiteracy." These images are not only found in the press, they're found in the documentation that accompanies our software, and sometimes in our own lazy rhetoric.

Sherry Turkle has shown us how meanings for concepts such as "mind," "intelligence," and "living" have changed with the introduction of computers. As technology forces new roles for teachers, volunteers, and students in adult literacy instruction, we

"We are, then, in the language-making business as much as we are in the literacy business."

must involve ourselves actively in the development of new definitions and the recasting of old ones. "Classroom" no longer means a physical space with four square walls in an egg-crate structure, at least not always. Some "classrooms" are the non-space, or several private spaces, defined by an electronic network and its participants. And this classroom, in turn, changes the horizons of education.

We are, then, in the language-making business as much as we are in the literacy business. We can change the resonances of words such as "learning" and "literacy" and "at-risk," but to do so responsibly we must pay attention to the definitions, both explicit and implicit, found in the technology we create, purchase and use. We must be sensitive to our own language and realize that the words we select can be the harbingers of the future we would embrace.

Dr. Turner is Assistant Director of Adult Literacy and Special Needs for the St. Paul, Minnesota, public schools, and a member of the AL&T Steering Committee. She can be reached by mail care of this newsletter.

Evaluation of *Keystrokes to Literacy*

by Emory J. Brown and Eunice N. Askov

Keystrokes to Literacy, earlier called *Templates for Literacy*, is a manual designed by Playing to Win, Inc,. to help the beginning adult reader integrate computer learning and literacy learning. *(See "Playing on Your Own at Playing to Win, Inc." in our Fall, 1989 issue—Editor.)* The manual offers guidelines for creating activities that reinforce literacy learning and introduce at the same time specific computer skills on word processing, spreadsheet, database, and graphics software of any brand name. *Keystrokes to Literacy* was field-tested at sites in three cities—New York, Weirton, West Virginia., and Salem, Oregon—during 18 weeks in the spring of 1989. We evaluated the manual's effectiveness in improving student attendance, student recruitment, and instructors' and students' attitudes toward and skills using computers. We collected data by using the mail, telephone calls, logs, and personal visits. The following summarizes what we found:

Tutors and teachers were enthusiastic about their use of the manual as a tool for teaching for low-level literacy students. They found the template exercises easy to use. Teachers and tutors said that through the templates they integrated computer use into literacy education. Most of the instructors rated the template exercises as most important. During the evaluation, almost all instructors limited their computer teaching to the word processing templates—to the exclusion of tem-plates for database, spreadsheet, and graphics exercises. All sites continued to use the manual after the field testing. Professional teachers with limited computer experience trained them-selves in use of the manual, but inte-grating the templates into the curriculum took considerable time. Tutors depended heavily on the teachers to provide help in using the templates.

The computer templates seemed to be effective in teaching both computer and literacy skills. Students of all reading levels learned computer skills by using templates. Several felt their computer skills helped them find jobs. They also said that the templates helped them improve their reading and writing. In addition, students demonstrated pride, increased self-esteem, and a sense of empowerment.

The opportunity to work with computers seemed to help the programs recruit both students and tutors. Most students said the computer kept them coming to class and interested in the lessons. It was not possible to separate the influence of the manual from the influence of the computer.

The manual seems to have had the positive effect on students that its creators intended, increasing their literacy skills and their computer skills. The manual also aided in the recruitment and retention of students. Our evaluation consistently points to the value of *Keystrokes to Literacy* as a teaching tool for literacy providers.

Emory J. Brown is a member of the Institute for the Study of Adult Literacy, at Penn State University, 248 Calder Way, Suite 307, University Park, PA 16801, 1-814/863-3777. Eunice N. Askov directs the Institute, and is a member of the Adult Literacy and Technology Project's steering committee.

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Newsbriefs

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The **Reader Development Program** (RDP) of the Free Library of Philadelphia is soliciting unpublished bibliographies, instructional materials, curriculum guides, lesson plans, teaching guides, resource guides or classroom handouts developed by ESL teachers and tutors for inclusion in a 1990 bibliography. Contact Vickie L. Collins, RDP, The Free Library of Philadelphia, Logan Square, Philadelphia, PA 19103, 1-215/686-5346.

"State Literacy Strategies: A Policy Primer" to assist policymakers and literacy activists in the creation of effective and comprehensive literacy strategies, has been developed by Brizius & Foster as a project of the April, 1989, National Conference on State Literacy Initiatives. The Primer, which costs $5.00, is available from the Mississippi Literacy Foundation, P.O. Box 139, Jackson, MS 39205, 1-601/359-2673.

The El Paso Community College will sponsor **"Literacy for a Global Economy: A Multicultural Perspective,"** February 21-23 at the El Paso Marriott Hotel. Speakers include Donaldo Macedo, Forrest Chisman, Arlene Fingeret, Barbara Kazdan, Larry Mikulecky and Ron Solorzano. Contact Kay Taggart, 1-915/534-4159.

The **Virginia Technical Graduate Center** and the **George Mason University** will sponsor their **10th annual Lifelong Learning Research Conference** Feb. 19-20 at the University of Maryland at College Park. Contact William Rivera at 1-301/454-4933.

The **International Society for Technology in Education (ISTE)** announces the publication of the quarterly *C.E.L.I. Journal* (Computer-Assisted English-Language Learning Journal), for computer-using ESL, bilingual education and adult literacy teachers. Subscriptions are $18.50 annually. Call 1-503/686-4414.

The Correctional Education Leadership Forum takes place in the Georgetown University Conference Center, Washington, DC, Feb. 24-27. Cost is $100. Contact Nell Miller, 1-301/333-2000, or Alice Tracy, 1-301/490-1440.

Conference Report

Research, Practice and Business Join Over Workplace Literacy

by Jane Laidley

At the Kodak-sponsored National Workplace Literacy Conference, held November 6-8 in Rochester, New York, researchers, consultants and administrators in adult education met with concerned representatives from industry. Organizers of the conference said their goals were to "identify the problems and issues that face us in the changing needs for literacy in the workplace, identify policies and directions for the future, showcase exemplary practices, and identify current and future research that will move forward the workplace literacy agenda."

The meeting of these different players in the literacy game over a shared agenda seemed important to all concerned. The inclusion of educators from 'the field' was made possible through the initiative of Christy Bulkeley, Vice President of the Gannett Foundation, which paid expenses for 32 practitioners.

The conference featured three separate 'tracks' for presentations and discussion: a policy track, a practitioners' track, and a research track, a division which threatened to confine interaction between the different elements to a token or symbolic level. But participants' needs to question others and to communicate their opinions led most people to leap in and out of the different tracks, sampling as much of all three as possible.

One of the keynote speakers, Dr. Sue Berryman, Director of the Institute on Education and the Economy at Teachers College, Columbia University, presented research and opinions about the nature of language acquisition, symbolic thought, and the effect of context on writing and reading instruction—unusual and welcome conference fare for representatives of the federal government, Ford Aerospace and the Motorola Corporation.

Dr. Anthony P. Carnevale outlined the advantages and implementation of a "modern apprenticeship model," as a way of giving learning a functional, and even productive context. Other speakers included Mr. Kay Whitmore, President of Eastman Kodak Company, Mr. Robert Jones, Assistant Secretary of Labor, and William Kolberg of the National Alliance of Business. United

"UAW Pres. Owen Bieber generated the most enthusiasm speaking articulately and powerfully about the needs American workers, who in the '80s had become 'underequipped' and 'disposable.' "

Auto Workers President Owen Bieber generated the most enthusiasm from the conference participants, speaking articulately and powerfully about the needs of the American worker, who in the '80s, he said, had become "underequipped" and "disposable."

What of each other's perspectives the three different camps took away is impossible to know. Perhaps as usual, the most fruitful developments will be the connections made between people and the promise of a return engagement next year.

Jane Nissen Laidley is Executive Director of the non-profit educational company PCC, Inc., and a member of the AL&T Steering Committee. She may be reached care of this newsletter.

several hundred hours of development, I felt I had a program appropriate for a variety of low-level readers. The software was purchased immediately by several local community colleges. Flushed by this initial success, I demonstrated my program to a literacy program administrator. To my surprise, he found the program to be unsuitable because it relied upon a story of conflict. He reasoned that the story would simply reinforce adult illiterates' poor self-esteem by reminding them of the conflicts they suffer every day.

I left that meeting worried that I had made a very costly error that had narrowed the market for this product. Since then, happily, other literacy-program administrators have received the program enthusiastically, using it with their intermediate-level students. I haven't, however, disregarded the first administrator's comments; I'm currently writing a reading program bereft of tension, for basic-level students. Now, as the skill-level of the software increases, the topical content and dramatic structure of the stories grows more complex—a direct outgrowth of the product demonstrations.

I've also learned to gear my products' documentation to the middlepersons, the intermediaries. The manuals that go along with *Graffiti One* and *In the Print Shop* include a list of reasons computers are an ideal medium for teaching reading. Buyers can use these reasons to argue for more funds for acquisitions, and administrators can use them to help introduce computer use to teachers and tutors. I've also suggested discussion topics and prereading exercises for the teachers to use in class, and I've made sure that word lists and readings are printed on single pages of the manual so they can easily be copied for entire classes. More useful and attractive documentation provides better service to those who will work with the product in a learning environment.

I've learned that my work includes taking my message directly to teachers, tutors and administrators, through conferences, newsletters, direct demonstrations, and networking (the non-electronic kind). I find myself pumping hands, passing out business cards and trying to convince decision-makers to buy my vision like some educational evangelist. But at every conference where LinguaTec has had a booth, people stop, look, listen and get it. These converts not only become customers, but they in turn give me feedback about my products.

Larry Statan designs software for LinguaTec Corporation. His hypermedia products in the Speakware *reading series include* Graffiti One *and* In the Print Shop *($112 each), which are aimed specifically at adult literacy students; also in the* Speakware *series, he has created* Accent Improvement *(3 disks, $299) which he wrote to augment pronunciation classes, but which has been successfully used in literacy programs as well. These programs must be used on a Macintosh Plus or SE.*

Mr. Statan may be contacted through LinguaTec, 111 West Evelyn Avenue, Suite 306, Sunnyvale, CA 94086, 1-408/746-1901.

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Writing

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will affect their progress and even the direction of their efforts. However, as Engberg writes, citing work by Daiute and Olds, "The impact of word processing on the teaching of writing is so untested, and the possible effects so varied, that little is known." (1982:17)

The Writing-Process Model

Whatever the means—pen and paper, typewriter, hieroglyphs or word-processor—all writing can be characterized by its relationships to language, to its implied reader, and to the mind of the writer. Donald Graves, one of the first and most comprehensive modern investigators into the writing process, reminds us that "(w)riting is not speech. Writing wears the guise of speech since it uses the same material; words, information, order, organization. But there is a chasm between speech and print. When I write, I supply everything. Alone and in silence I provide energy, initiative, information, language, order, and the conventions to communicate...." (1983:61) In an undated monograph, Walter Loban insists that writing "is one of the ways of *coming to know*, it is also one of the ways of becoming an educated person." As for the role schools and teachers play in students' learning to write, Loban suggests that "Writing fares best in schools where in all subjects students are taught to clarify their thoughts, feelings and values. To write clearly, students must think clearly. To write with power and imagination, they must think with power and imagination. When students have learned to write better they have learned to think better...Students do not learn to write by spending most of their time adding and changing words and punctuation in sentences devised by someone else. No textbook, no drill sheet can ever replace the pupils' composing their own feelings, thoughts, and experience." (1-2)

"Interaction in small groups 'leads to clashes of points of view that encourage children's development of individuality, creativity, and the ability to think.' "

Loban contends that writing is best thought of as a process, that thinking and writing are inextricably connected, that workshop and tutorial methods are more efficient than teacher- or textbook-dominated instruction in writing, and that correctness need not be a major concern in the teaching of writing. His theory is supported by the work of Graves (1983), Britton (1970), Vygotsky (1962), Moffett (1976), Rosenblatt (1976), Murray (1968), and the research and experience of James Gray's the Bay Area Writing Project, later to become the National Writing Project.

A "driving force called voice" underlies all stages of the writing process. (Graves, 1983:227) The writer's voice stems from and encompasses the urge to write; a relationship to words, conventions and the writing process; and an attitude toward the subject to be written about. "To ignore voice is to present the process as a lifeless, mechanical act.... Voice is the imprint of ourselves on our writing. It is that part of the self that pushes the writing ahead, the dynamo in the process." (1983:227) Writing about children specifically, Britton says, "What matters about writing is that children should write about what matters to them to someone who matters to them." (quoted in Hailey, 1978:103)

The most frequently cited stages of the writing process are taken from the work of Lucy Calkins and Donald Graves, (1983) though Graves' theories on learning issues such as the overconcern for neatness or correctness may not be immediately apparent to adult learners, volunteer tutors, or even experienced educators. While the work of Calkins and Graves is based on studies of school children, the following six stages are evident in the methods of writers of all ages and skill levels:

Prewriting—Writing begins with an idea, thought, thing to put in print, and a strategy for making the thought visible. (Dyson, 1981) It may begin with Ashton-Warner's (1963) "key words," words having special meaning in a writer's life, and include what Graves refers to as choice and rehearsal—group brainstorming, talking, sketching, making lists of words, outlining, reading wordless books, daydreaming with music— any stimulus that encourages an idea or thought to take shape.

Drafting—Graves says the terror of the blank page is overcome by following this "simple pattern: select, compose, read, select, compose, read...." (Graves, 1983:226) Handwriting, spelling and grammatical inconsistencies should not be considered at this stage.

Sharing—With a partner, a small group, or with the teacher, the student reads her own writing and the writing of others for clarity and legibility. Interaction in small groups "leads to clashes of points of view that encourage children's development of individuality, creativity, and the ability to think." (Long and Bulgarella, 1985:171)

"Writing is fundamental to learning and everything else is secondary to that."

Revising—Revision is the addition, deletion and reorganization of information which is usually accomplished by repeated "trial-and-error" versions. Each version is a refinement of content and meaning. "What should never be forgotten, however, is that the *force* of revision, the *energy* for revision, is rooted in the [student's] voice, the urge

to express." (Graves, 1983:160)

Editing—This stage focuses on the conventions of spelling, punctuation, and grammatical agreement for clarity and understanding. Graves notes that concerns for early correctness and etiquette frequently override a primary emphasis on content and voice. Writing instruction for adults too often *begins* at this stage, contributing to the student's misconceptions about the importance of these issues in the work of more skilled writers.

Publishing—Writing is most usually a public act (except for personal journals) meant to be shared. This act is not only the privilege of literary scholars, rather it is a "literary enfranchisement" for each student in a classroom. (Graves, 1983:55) Publishing gives the writer a sense of audience during composing, provides a hardcover record of accomplishments, and reminds the student that her work is as valued as that of any other published writer.

How in fact do learners perceive writing as a skill to be grasped? What do students tell us about their efforts to write? In Graves' research, students listed five aspects important to them, the sum of which, he feels, "good teaching *follows* and *extends*" as the student moves through the writing process. (Graves, 1985:153) They are: 1) spelling and handwriting, 2) motor-aesthetic issues, 3) conventions, 4) topic and information, 5) revisions. (Graves, 1982: 178)

Gray concludes that "Writing is fundamental to learning and everything else is secondary to that." (1984:11) If we take this to heart, along with the increasing use and availability of microcomputers in literacy instruction, we are led to explore new and effective ways that teachers, methods and technologies can promote writing competency and enjoyment for students. I've reviewed some of the ways computers are used to enhance writing skills, looking specifically for evidence of a connection between word processing and the writing process that can help us encourage students to write, and therefore think, with "power and imagination."

"In adult literacy instruction, where all students can be considered to be below the 'norm', the possibility is very high for a false stereotyping..."

Integrated Instructional Uses of Computers

In the United States between the Civil War and World War I, print media played the dominant and even exclusive role in social communication, and it was "during this era of total print dominance...[that] our contemporary educational system took shape." (Lacy 1983:119) However, since 1920 there have been two waves of technological change: 1) an audio-visual wave (radio, movies, television, the phonograph), and 2) a computer/electronic wave. "The exclusive role of print to provide the reality that lies beyond personal experience has been shattered forever." (Lacy 1983:121) Of the electronic revolution, Lacy says "The computer [has] given us powers without which modern society could not operate, and has enhanced immeasurably the capacity of human intelligence to analyze and organize experience." (126)

As a part of that revolution, computers, especially microcomputers, have made inroads into both the secondary and elementary curriculum. Moursund divides the field of the instructional use of computers into three modes: 1) learning/teaching ABOUT computers, 2) learning/teaching that USES computers, and 3) learning/teaching that INTEGRATES computers. (1985:11) Moursund characterizes the third mode, "*Computer-Integrated Instruction*, as the use of computers as a tool throughout the school curriculum." (19)

Reports on forms of computer-integrated instruction, and specifically word processing, in K-12 education suggest a slow pace of implementation. Writing in 1987, Rockman lists the three most common uses of computers in California schools as computer literacy, subject-matter instruction, and remedial instruction (2), with the latter two uses indicating a reliance on drill-and-practice applications, and the first having little to do with a general curriculum. However later in his report he shows that during the two academic years spanned by the study (1983-1985), word processing as a major educational tool grew from 30 to 44 percent. (10) Dalton and Watson (1986) suggest that many educators already hold views that reflect the values of researchers such as Moursund. "Many teachers," they write, "believe that the great potential benefits of instructional applications of computer-based technologies lie in more open-ended computer activities such as word processing where the computer is used more as a learning tool than as an electronic tutor." (3) As the result of working with seventh-grade students throughout an academic year, they conclude that "word processing technology, because of its ability to greatly simplify the rewriting phase, may provide the ideal medium for the development of holistic writing skills for many learners." (13)

Of course, the attitudes of teachers directly affect the integration of computers into adult basic-skills education, and into education in general. Henry Becker finds that teachers evaluate the effectiveness and appropriateness of computer instruction differently depending on the achievement levels of the students involved: the teachers feel that the more computer time spent in word processing activities, the more the average and above-average high school and middle school students seem to learn. In contrast, in the opinions of these teachers, average middle school students and below-average students of all grade levels, seem to learn more

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when they spend computer time on drill-and-practice activities. (Becker, 1987:3) Becker makes no claims as to the truth of these teachers' perceptions. However in adult literacy instruction, where all students can be considered to be below the 'norm', the possibility is very high for a false stereotyping that denies learners access to potentially valuable forms of computer-integrated instruction, word processing included.

Becker also reports that teachers say using the computer to teach composition enhances teacher-student and student-teacher interaction. He reports teachers' opinions, again not based on quantitative analysis, that "Not only do students write more, but they also write better." (in Cannings & Brown, 1986:136)

> ..."**'Tis not enough no harshness gives offense,**
> **The sound must seem an echo to the sense;**
> **Soft is the strain when Zephyr gently blows,**
> **And the smooth stream in smoother number flows;**
> **But when loud surges lash the sounding shore,**
> **The hoarse, rough verse should like a torrent roar;**
> **When Ajax strives some rock's vast weight to throw,**
> **The line too labors, and the words move slow;**
> **Not so, when swift Camilla scours the plain,**
> **Flies o'er the unbending corn, and skims along the main.**
> **Hear how Timotheus' varied lays surprise,**
> **And bid alternate passions fall and rise!**
>
> *Sound and Sense*
> *—Alexander Pope*

Jane Nissen Laidley, Director of PCC, Inc., a non-profit education corporation, is on the AL&T Steering Committee. She can be reached care of this newsletter.

Next issue: Part 2—Motivational Effects; Revising and Editing

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Virus

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hard copy of all the files on your computer, including the invisible files. The hard copy should also include the size of the files. By periodically comparing your file directory with the hard copy, you can check for any new files that have appeared—be especially suspicious of any new invisible files, because most viruses are invisible. Also compare the hard copy to the current file directory for any sudden change in the size or number of system files; this will help you protect yourself from viruses that masquerade as system files or that tag themselves onto a system file.

When you suspect a virus attack because your computer or system is acting up, don't cry wolf. The problem may be a corrupted system file, so try replacing your current system files with copies from the original disks. If the problem stops, it probably was not caused by a virus. If, however, system failures continue, or if your data files appear corrupted, you likely are experiencing a virus.

If, finally, the *thinkable* should occur—you determine that a computer virus has infected your system—you have backed up your files regularly. Your data loss will be minimal. Most viruses don't activate themselves immediately, so you can be given the opportunity to remove the virus before it activates itself. On the other hand, you may have made a copy of the corrupting one of your backups. For this reason, it is important not to compare file sizes to a hard copy.

If the virus takes control of your system—locking up the keyboard or sending comic messages—the first step is to shut down and then restart your computer using a good system disk in the floppy drive. Next, since you have backed up your data, the easiest thing to do is reinitialize your hard disk following the instructions included with your hard disk's software package. This will erase all the information on the disk, including all copies of the virus. When you reinstall your files and programs on the hard disk, after the reformatting, check the files against your hard copy of the directories to make sure that you are not reinstalling the virus. Once again check for invisible files and changes in the file size. If you are not using a hard disk, rebuild copies of your system disks using the write-protected original disk supplied with the program. Never, under any circumstances, work with unlocked original system or applications disks.

Once you have dealt with the virus on your system, it is important to warn the users of the system of the problem so that they can prevent the loss of their data and help prevent a reinfection of the system. The only way to stop the system from being reinfected by the same virus is to help the users remove any possible copies of the virus that have been transmitted to their floppy or hard disks. Obviously, users in any kind of network will be well-served if the systems operator ensures that all users develop good backup and recordkeeping procedures. Program administrators must also take steps to make sure that sound computer-management practices are implemented.

"The most vulnerable systems are those using or sharing a hard disk, connected in a Local Area Network, or used in telecommunications. Computer games available for free or as shareware on a variety of networks, have been a major source of virus infections."

By following the basic steps outlined above, the occurrence of a computer virus will cause only a slight headache rather than a fatal disease. Back up your data regularly. Make a list of the files and their size, and use the list to periodically inspect for changes in your files. Make sure that you keep a good copy of all your software and use these copies to replace suspect files. Learn to use the utility programs you already have to accomplish these tasks. Resist the temptation to buy expensive virus-killer programs. The best defense against the effects of viruses is backing up your data. Finally, educate your users when a virus attack occurs. If you don't the virus will soon be back.

Tom Pier is presently completing graduate studies at Brigham Young University in computerized vision systems. He can be contacted care of the AL&T Newsletter.

Re-tireless Years...

One of the AL&T Project's founders, Bob Clausen, is retiring from the State of Oregon's Department of Education. Bob has worked tirelessly on behalf of adult basic education for the last 17 years. He will keep his seat on our Steering Committee, and on the Josten's Learning Corporation's At-Risk Youth Advisory Board. In December he became an advisor to KET's pre-GED series.

On a busman's holiday, he and his wife, Jessie, will be touring literacy projects and more scenic locales throughout the Southwest and the Sun Belt, communicating with all and sundry via mail, phone and possibly modem. Along the way Bob hopes to add to his library of adult education public domain software, and in turn add to the collections of the centers he visits.

We at the AL&T Project wish Bob and Jessie the absolute best as they go jouncing off, and are very happy that Bob will be able to squeeze us in to his post-employment plans. As he enters retirement, Bob has apparently set his sights on siezing the word 'tireless' for his own. ■

Technology Consultants
Adult Literacy and Technology Project

The Technology Consultants in the Adult Literacy & Technology Project have been active for the last three years, providing assistance to hundreds of literacy practitioners on a wide range of questions such as how to begin using technology, how to select software and hardware and how to find software for special-need learners. Requests for information have come from practitioners at many kinds of agencies: ABE, Laubach, LVA, universities, government, business, labor, community colleges and corrections.

The TCs, chosen for their literacy-related technological expertise, are 'on-call' for free or low-cost consultation, and for presentations at conferences. Please keep this list for reference.

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